MAY 2 194

PAPER TRADE JOURNAL

APRIL 27, 1944

Established 1886

Crucial Times

"These are the times that try men's souls."

PAINE

Civilization is today at an epochal crossroad; the fate of a millennium to come hangs in balance.

Our inevitable victory rests on three essentials: Manpower, Material and Morale.

The Pulp and Paper Industry serves all three. Many of its members are in the armed forces. Much material has it transported. Principally, however, in delivering the powerful message of Freedom and Liberty has it bulwarked our cause.

GOTTESMAN & COMPANY

— INCORPORATED —

WOOD PULP

22 EAST 40th STREET NEW YORK 16, N. Y.

EUROPEAN OFFICES: Birger Jarlsgatan 8, Stockholm, Sweden

D
DOWNINGTOWN
RECONVERSION
at the DROP of a HAT
We're equipped right now for building paper mill machinery. We don't have to remove, or even move, a single one of the many new, modern machine tools and other equipment that we've installed to increase our war production, for everything we've added is "ideal" for making our normal line of products. When the "go ahead" comes from our government, whether it be before the war ends or after Germany and/or Japan "unconditionally surrenders," we can start manufacturing your machinery without delay, if you don't delay until then in deciding what you want....The sooner you discuss your needs with one of our sales engineers, the sooner you can place your order.... The Downingtown Manufacturing Company, Downingtown, Pa.

PAPER TRADE JOURNAL

Established 1872

Title Reg. U. S. Pat. Off.

Volume 118 Number 17

Published every Thursday by Lockwood Trade Journal Co., Inc.

Executive and Editorial Offices: 15 W. 47th St., New York 19, N. Y.

New York, United States of America

BRyant 9-0860

GEO. S. MACDONALD
President

ARTHUR E. GORDON
Executive Vice-Pres.

JOSEPH P. HORGAN
Secretary

GEO. E. LOCKWOOD
Treasurer

Western Representative:

H. K. VINTON
123 West Madison St., Chicago, Ill.

HENRY J. BERGER
Editor

STILLMAN TAYLOR
Associate Editor

R. G. MACDONALD
"TAPPI" Editor

LYNN M. LAMM
Washington Correspondent

Subscriptions
(Payable in advance)

By the year $4.00
Single Copy ..... 10 cents

Postage Extra:
To Canada $2.08
To Other Foreign Countries $3.50

Member Audit Bureau of Circulations

PAPER *established Feb 17, 1899, combined with* PAPER TRADE JOURNAL *Nov. 16, 1899.* PAPER *established Sept. 21, 1910, combined with* PAPER TRADE JOURNAL, *Feb. 19, 1925.* *All rights to the above titles reserved.*

PAPER TRADE JOURNAL *is entered as Second Class matter at the Post Office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office of Lockwood Trade Journal Co., Inc., 34 N. Crystal St., East Stroudsburg, Pa. Printed in U. S. A.*

Copyright 1944 by the Lockwood Trade Journal Company, Inc. The contents of PAPER TRADE JOURNAL *including all articles, illustrations, etc., are covered by copyright and may not be reprinted except by permission.*

CONTENTS

APRIL 27, 1944

PAGE

WPB Permits Additions to Two Paper Mills 7
Paper Men Named to N.M.A. 7
Talks on Protective Equipment 7
Strike at Nekoosa-Edwards Ends 7
Many Paper Items are Scarce in Midwest 8
Dr. Kress to Speak May 1 8
Tribune's Newsprint Request Denied 8
Guests at Salesmen Luncheon 8
Explain Waste Paper Prices 8
Financial News 10
Johns-Manville Nets $1.66 10
L. W. Lawrence Joins Bulkley, Dunton 10
To Be Production Manager 10
New England TAPPI Discusses Sulphite 12
Precautions Taken Against Forest Fires 18
To Study Control of Blight Disease 18
To Hold Ladies Night 21
To Control Shipping Sacks 21
Alaska Pulptimber for Sale 22
The Use of Chlorine 23
Editorial 24
Coming Events in Paper Industry 24
Production Ratio Report 25
Paperboard Operating Ratios 25
J. L. Perkins to be General Manager 25
R. B. Richardson Elected Vice Pres. 25
Latest Market Review 36
Miscellaneous Markets 38
Market Quotations 38
Classified Advertising 46

Technical Section *("TAPPI")*

Wet Tensile Breaking Strength of Paper and Paperboard 27
TAPPI Notes 28
The Mechanism of Flow of Paper Stock in Pipes 29
Lighter Newsprint Will be Available 34

PAPER TRADE JOURNAL IS INDEXED IN INDUSTRIAL ARTS INDEX

INDEX TO ADVERTISERS ON PAGE 52

Dependability . .

THE *New*

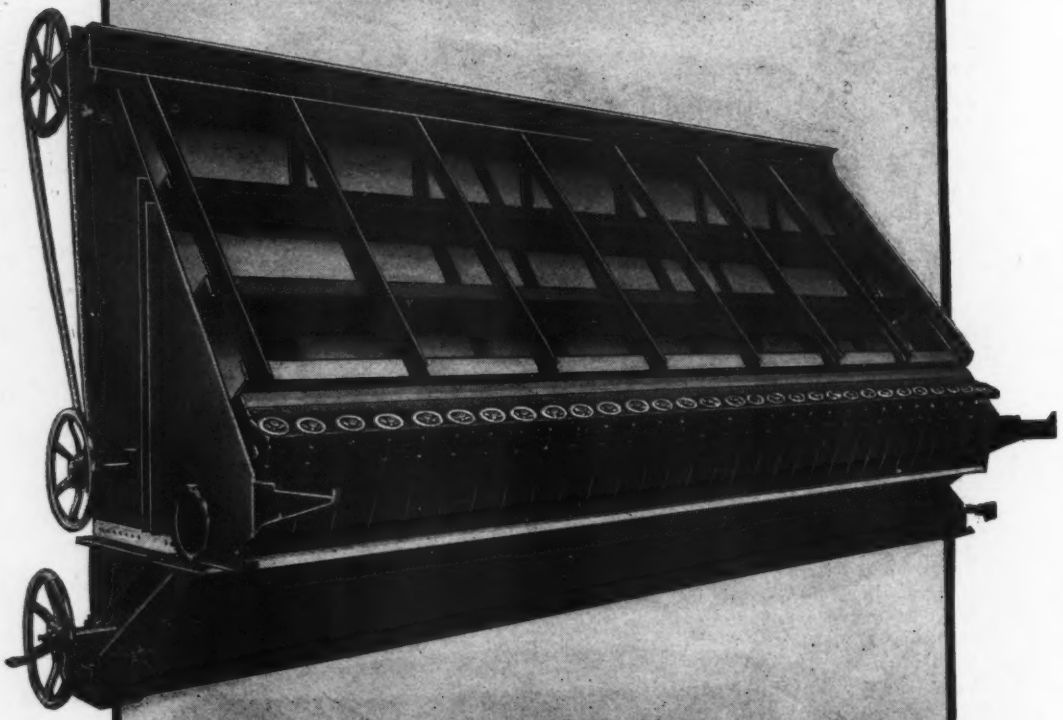
BAGLEY & SEWALL

SLICE

. . Installed on New or Existing Machines

. . Greater Production Possible

. . Long Life - Low Maintenance



The Bagley and Sewall Company

Builders of Paper Making Machinery

WATERTOWN, NEW YORK

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 118, No. 17 Thursday, April 27, 1944 Price Ten Cents

WPB Permits Additions to Two Paper Mills

Construction of More Space At Kimberly-Clark Corp. Ordnance Division and Enlargement of Bergstrom Paper Co. Warehouse Are Sanctioned — Strike At Nekoosa-Edwards Ends — Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 24, 1944—War Production Board sanction has been obtained for construction of two additions to concerns at Neenah, Wis., one a 45 by 44 structure at the Kimlark office, which is now known as the Kimberly-Clark Ordnance division, and the other to be a 55 by 55 addition on the top of the present warehouse of the Bergstrom Paper Company.

Fluor Brothers Construction Company, Oshkosh, Wis., has been awarded both contracts, and has started work on the Kimlark addition which is expected to be completed within six weeks. The Bergstrom project will proceed as soon as possible, considering difficulties due to the war.

The Kimlark building, to cost about $5,000, will be a one-story structure which will house four offices and a large general accounting department office. It will be of frame, steel and concrete construction. Present plans call for the transfer of all offices of the ordnance plant, now housed in the main office building of the Kimberly-Clark Corporation, to the Kimlark office and the new addition, so that all plant and office personnel is in one unit.

In peacetime, the Kimlark plant produced wall paper and other paper products. Since 1942, however, it has been converted into an ordnance division for the production of anti-aircraft gun mounts.

The Bergstrom addition will provide a rest room and will include separate lavatories, shower facilities, dressing rooms and lockers for both men and women working in the scrap paper department. It will eliminate the present women's rest room in this department, which was inadequate and obsolete, and will give more room in the present men's rest room by transferring some of the men to the new facilities. Orbison and Orbison of Appleton, Wis., are in charge of the engineering work.

Paper Men Named To N. M. A.

F. J. Sensenbrenner, chairman of the board of Kimberly-Clark Corporation, Neenah, Wis., and A. C. Gilbert, president of the Gilbert Paper Company, Menasha, Wis., have been named by the National Manufacturers Association as local members of its Veterans Employment Problems Committee.

The plan is to stimulate maximum preparation by individual companies for re-employment of returning servicemen by nationwide distribution of a comprehensive check-list covering all in-plant phases of the subject. The major purposes of the check-list are to stimulate preliminary study and thorough analysis of the many in-plant, external, legal, social and human relations phases which make up the re-employment problem.

Talks on Protective Equipment

"Protective Equipment" was the title of an address given last week by A. A. Soldner, Madison, Wisconsin Industrial Commission, at the fourth of a series of monthly safety meetings at the Valley Inn, Neenah, Wis. He contended that safety rules and regulations must have penalty and enforcement provisions which affect both employer and employe.

Thirty-two foremen and safety supervisors of paper mills and other industries of Neenah and Menasha attended the meeting, which was sponsored by the Twin City Safety Council.

Failure to use safety devices maintained by employers, he pointed out, provides penalties on employes, and he stressed the necessity for rules and regulations on safety measures. Safety devices, he emphasized, must be suitable and proper and adequately maintained.

Industrial accidents have been reduced from 35 per cent to 12 per cent and industrial accident deaths from 36,000 to 18,000 per year in the last 30 years.

Francis T. Rooney of the George Banta Publishing Company is general chairman of the council. H. H. Alderhold of the Menasha Products division of the Marathon Paper Mills Company and Edward A. Page of the Kimberly-Clark Corporation are co-chairmen of the monthly meetings.

Strike at Nekoosa-Edwards Ends

The walkout of 132 finishing room employes at

(Continued on page 18)

Many Paper Items Are Scarce in Midwest

Chicago Market Reports More Attention Is Devoted To Post-War Uses of Paper — Concern Is Felt Over Rising Costs and Taxes — Official Explains Waste Paper Price Schedule — Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 24, 1944—An increasing amount of attention to post-war uses of paper and to the possibility of retaining present gains in the "new use" field is noticeable in contacts with various trade sources here. Comments indicate that the trade has "given up" trying to predict what is going to happen to it in the immediate future and even while trying to abide by all rules and regulations, is willing to spend greater energies in its own post-war plans. The feeling persists that the war, despite its home front headaches, has helped to impress the importance of paper upon the minds of the consumer public and to teach thousands of people of the many sided uses and possibilities of paper and allied products.

Meanwhile, the trade is hard pressed to meet pulp allocations, as far as reports from mill representatives here are concerned, while the jobber trade is finding virtually all classes of "firsts" and substitutes drawn into the maelstrom of scarcity. Some jobbers express more frequent concern over the tax situation as coupled with the tremendous increase in the costs of cooperation as a condition that warrants far more attention than it is getting from a harassed industry.

Dr. Kress To Speak Here May 1

The Chicago Professional Paper Group will hold its regular monthly meeting at the Hamilton Hotel, Chicago, on Monday evening May 1. While attendance at these meetings has increased materially, along with the interest shown, the program committee feels that, in many ways, the May 1 meeting may prove the magnet for drawing the top amount of interest and this attendance. The speaker is to be Dr. Otto Kress, technical research director of the Institute of Paper Chemistry at Appleton, Wisconsin. Dr. Kress, widely known throughout the entire pulp and paper manufacturing industry, will discuss the "Fundamentals of Pulping." It is reported by the program committee that he will comment on the basic substance of all paper and board and describe how it is made. Also to be covered by Dr. Kress's talk will be the essential differences in processes now in use, the limitations that confront each of these processes and what are the new methods likely to be developed that will have a most profound effect on the entire pulp and paper trade.

Guests at Salesmen Luncheon

John Cornell, publisher of *Paper Mill News* and S. D. Knode, commuting sales executive of the Albemarle Paper Company, were guests of the western division of the Salesmens Association of the Paper Industry at its Monday, April 17 meeting at the Hotel Sherman. Mr. Knode, in particular, is expected to be a more frequent visitor now that Dick Banks has been transferred to the Virginia mills to be in charge of personnel. Already a fairly consistent visitor in using the Chicago office as his western headquarters, Mr. Knode will now spend more time in this territory. A round table discussion featured the April 17 session and plans were completed for a big attendance at the May 1 meeting when Douglas McMurtrie is to discuss typography in its present use and future possibilities. A second "special event" for May 1 is the showing of the excellent moving pictures provided by the Cherry River Paper Company and depicting the procession of paper from raw stages to the finished product. According to "Pat" Patterson of the Flambeau Paper Company, this program is getting especial attention from the attendance committee and many guests are expected to be on hand.

Tribune's Newsprint Request Denied

The Chicago *Tribune's* request for a yearly quota of 22.872 tons of newsprint to publish a daily paper in Milwaukee, Wisconsin, has been denied by the WPB. The request was denied on the basis of a limitation order of March 1, 1944, which permits a maximum usage of only 25 tons per quarter for any newspaper. The WPB, according to its own statement, has been obliged, because of the shortage of wood pulp, to restrict the quantity of newsprint which may be consumed in the publication of newspapers, and the restrictions "are applied by the WPB impartially on the basis of print paper consumption for a base period."

The WPB reply to the *Tribune* request, which was based on a statement that political conditions in Wisconsin necessitated a newspaper, very carefully pointed out that a government agency cannot pass on the reasons for the need for a newspaper, because of political reasons, but simply on the basis of the newsprint available. The statement was forwarded to the Chicago newspaper by A. R. Treanor, director of the printing and publishing division of the War Production Board.

Explains Waste Paper Prices

J. G. Sheldon, executive secretary for the Chicago Metropolitain area of the War Production Board, this week replied to allegations that present waste paper prices were a major reason for retarding waste paper salvage and collections. He prefaced his open statement to the public with the statement that the acute shortage of supply has created confusion within the industry, necessitating many firms to operate without profit and even at a loss. . . . "Under the existing ceiling price structure, it is not possible for a waste paper collector to pay more than 40 to 50 cents for 100 pounds, depending upon conditions of collection, and make a legitimate profit, taking into consideration the cost of hauling, handling, labor and processing." He adds that "it is quite apparent a great many people are entirely too price conscious in this all important contribution to the war which, after all should be motivated primarily by patriotism rather than any monetary return. This is particularly true at the moment in view of the present shortage of sufficient paper containers to carry the necessary food supplies and munitions of war to our armed forces."

Rolls — Rolls — Rolls

All NEED VICKERY DOCTORING

Press rolls, wire rolls, breast rolls, smoothing rolls, dryers, calender rolls, super-calender rolls—they *all* do better work, last longer, require less attention and maintenance when they're Vickery Doctored.

Keep your rolls on the job 100%. Get in touch with us if there's any question of installation, operation or service.

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending April 22, 1944

STOCKS

	High	Low	Last
A. P. W.	....	....	....
Armstrong Cork Co.	36¾	35¼	36¼
Celotex Corp.	11⅞	11⅜	11½
Celotex Corp., pf.	17⅞	17¼	17⅜
Certain-Teed Products Corp.	5	4⅝	5
Certain-Teed Products Corp., pf.	57¾	58¼	58¼
Champion Paper & Fibre Co.	23¾	23¼	23¾
Champion Paper & Fibre Co., pf.	109	108	109
Congoleum Nairn Co.	23¼	22⅝	22⅞
Container Corp. of American	23¼	22½	22⅝
Continental-Diamond Fibre Co.	11⅜	10⅞	11
Crown-Zellerbach Co.	16¼	15⅞	16
Crown-Zellerbach Co., pf.	99½	99¼	99½
Dixie Cup Co.	16½	16½	16½
Dixie Cup Co.—A	44½	44	44
Flintkote Co.	22¼	21	21¼
Flintokote Co., pf.	105	104⅞	104⅞
Robert Gair	3⅞	3½	3¾
Robert Gair, pf.	14½	14	14
International Paper Co.	14½	13½	13⅞
International Paper Co., pf.	74⅜	72½	72⅝
Johns-Manville Corp.	89	87½	88⅞
Johns-Manville Corp., pf.	....	....	....
Kimberly-Clark Corp.	35½	35½	35½
MacAndrews & Forbes	26⅛	25¾	25¾
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	47½	43½	44¼
Mead Corp.	8¾	8⅜	8¾
Mead Corp., pf. A-6%	90	89½	90
Mead Corp., pf. B-5½%	80½	79	80
National Container Corp.	14	13⅝	13¾
Paraffine Companies, Inc.	49	48¼	48¾
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	14⅛	13⅞	14
Rayonier, Inc., pf.	30¼	29¾	30
Ruberoid Co.	29⅛	28½	28½
Scott Paper Co.	40	38⅞	39
Scott Paper Co., pf.	109½	109½	109½
Sutherland Paper Co.	....	....	....
Union Bag & Paper Corp.	9⅞	9⅜	9⅝
United Paperboard Co.	4⅝	4½	4½
U. S. Gypsum Co.	73½	71	72
U. S. Gypsum Co., pf.	176½	176½	176½
West Virginia Pulp & Paper Co.	18½	18	18
West Virginia Pulp & Paper Co., pf.	107	107	107

BONDS

Abitibi Pulp & Paper Co. 5s '53	....	....	....
Celotex Corp. 3¾s '55	103½	103½	103½
Certain-Teed Products Corp. 5½s '48	101¼	101	101
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	107	107	107
International Paper Co. 5s '47	104	103	103
Mead Corp. 3½s '53	....	....	....
West Virginia Pulp & Paper Co. 3s '54	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending April 22, 1944

STOCKS

	High	Low	Last
Great Northern Paper Co.	32⅜	32⅜	32⅜
Hummel-Ross Fibre Corp.	5⅜	5	5⅛
St. Regis Paper Co.	4⅜	4¼	4⅜
St. Regis Paper Co., pf.	149½	147	149½
Taggart Corp.	5⅜	5½	5½

BONDS

American Writing Paper Co. 6s '61	100⅝	100	100

Johns-Manville Nets $1.66

Consolidated earnings of the Johns-Manville Corporation and its subsidiaries, were $1,451,566 for the first three months of this year, equal to $1.66 a common share, after preferred dividend requirements, Lewis H. Brown, president, reports. In the corresponding period of last year, profit was $1,087,119, or $1.23 a common share. Sales in the respective quarters were $24,450,541 and $23,752,896.

Sutherland Profits Off

The Sutherland Paper Company for the quarter to March 31, reports a net profit, of $169,981, equal to 59 cents a share, compared with a net of $183,637, equal to 64 cents a share in the same quarter of 1943. Contingencies amounted to $60,000, against $30,000.

L. W. Lawrence Joins Bulkley, Dunton

The appointment of L. W. Lawrence as sales representative of Bulkley, Dunton Pulp Company has been announced by Fred. Enders, president.

Mr. Lawrence will work with Milton Bailey in covering the territory that comprises Wisconsin, Illinois, Michigan, Indiana, and Minnesota. His headquarters will be in the company's Chicago office, at 80 East Jackson Boulevard.

Before joining Bulkley, Dunton, Walter Lawrence was for 20 years sales representative of the Schlafer Supply Company, Appleton, Wisconsin

L. W. Lawrence

where, working under A. A. Wettengel, president, he gained wide experience and established many contacts in the paper industry.

Born and educated in Green Bay, Wis., Mr. Lawrence has spent his entire adult life in the mill supply business, and has made innumerable friends among paper mill executives. His first position was with the Bay Verte Supply Company 26 years ago, and later he joined the Shadbolt and Boyd Mill Supply house.

Mr. Lawrence is married and has 2 daughters, aged 13 and 16. They will live in Chicago.

Rex Vincent, predecessor of Walter Lawrence, is preparing to move to Bulkley, Dunton's New York office.

To Be Production Manager

James F. Reid, former Deputy Chief of the Alloy Steel Branch of the War Production Board, has been appointed Production Manager of the Timken Roller Bearing Company of Canton, Ohio. Mr. Reid had been production manager of the steel and tube division of the Timken Company before obtaining a leave of absence in May, 1942 to join WPB as chief of the Alloy Steel Section. His activities and responsibilities in this new capacity extend to all divisions of the company.

James Reid first joined the Timken Company twenty-five years ago as an employee in the production department, becoming, ten years later, production manager of the steel and tube division.

LOMBARD
Centrifugal
PUMPS

BACKED BY TWO GENERATIONS
OF HYDRAULIC ENGINEERING

LOMBARD GOVERNOR CORPORATION

MAIN STREET, ASHLAND, MASSACHUSETTS

Sales office: 60 E. 42nd Street, New York 17, N. Y.

New England TAPPI Discusses Sulphite

The New England Section of the Technical Association of the Pulp and Paper Industry and the Connecticut Valley Division of the Superintendents Association met at the Hotel Kimball, Springfield, Mass. on Friday evening, April 21, 1944. W. L. Foote of B. F. Perkins & Sons presided as chairman.

Three outstanding speakers discussed the sulphite pulp situation and prospects, namely Vance P. Edwardes of the International Paper Company and President of TAPPI, S. G. Blankinship of the Port Royal Pulp and Paper Company and President of the Superintendents Association, and Johannes Westergaard of Castle & Overton, Inc.

Mr. Westergaard reported on foreign conditions, reporting that Sweden has produced a million tons of chemical wood pulp for cattle feed since the war started. This fodder is mixed with molasses when fed to cattle. Swedish mills are still intact and can begin shipping from its large inventory shortly after the end of the war. No price change or pulp dumping in the American market is expected. Speaking of Russia he stated that prior to the war it produced about one million tons a year and imported from other countries for internal consumption. Russia is capable of building an enormous pulp industry in the future but it will be many years before it is likely to start exporting. The Norwegian forests appear to be undamaged but the pulp mills, producing for Germany have been allowed to get in bad condition due to the lack of repair or modernization. Some of the Finnish mills have been damaged but those in Central and Western Finland are intact and would permit Finland to return to the export market soon after the end of the war. Both Finland and Sweden will probably serve the local European market before considering overseas shipments.

John H. Browne of the Chemical Paper Manufacturing Company and chairman of the Connecticut Valley Division introduced S. G. Blankinship who talked on statistical trends in the industry, pointing out that pulp production doubled between 1925 and 1942 and appears to be increasing in a straight line trend to 1950, however, it appears likely that future chemical pulp expansion will be in kraft grades, particularly the bleached products. In Canada alone 250,000 tons per year are projected. Many new products now being developed will require new pulp tonnage.

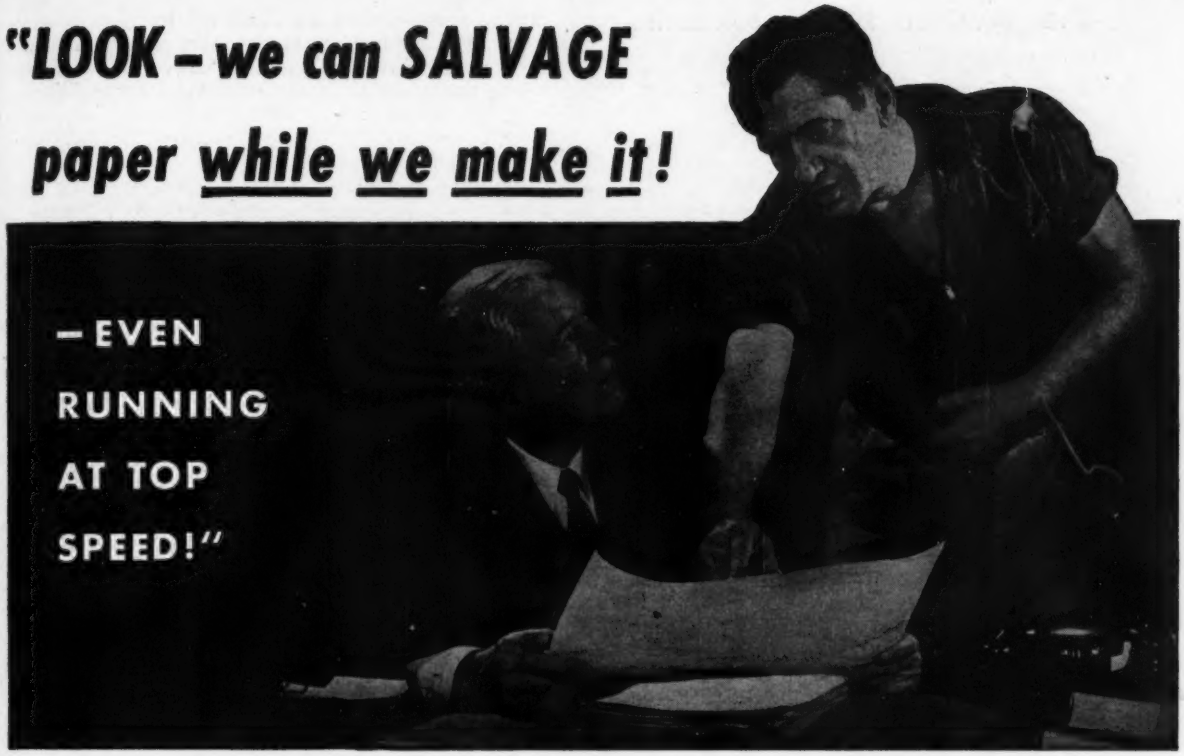
Vance P. Edwardes pointed out that the same business pattern should follow this war as previous wars—a period of hesitation, followed by a replacement boom, a brief depression, another larger boom, in turn followed by a prolonged recession. Mr. Edwardes reviewed world conditions and then indicated some of the technical changes to be expected. These included the substitution of bleached groundwood and kraft for sulphite. The removal of brightness ceilings will lead to the development of new bleaching techniques. Developments in waste liquor recovery and improved wood cleaning methods should lead to lower costs.

W. F. Hoffman of the Fitchburg Paper Company reported as chairman of the Nominating Committee. The following were elected for the coming year: Chairman—W. L. Foote, B. F. Perkins Company, Holyoke, Mass.; Vice Chairman—L. B. Tucker, Crane & Co., Dalton, Mass.; Secretary—Henry L. Mellen, Hercules Powder Company, Holyoke, Mass.; Treasurer—Hermon T. Barker, Bird & Son, E. Walpole, Mass.; Executive Committeemen—C. H. Child, Merrimac Paper Co., Lawrence, Mass.; P. S. Barnhart, Westfield River Paper Company, Russell, Mass.; Norman I. Bearse, Champion International Paper Company, Lawrence, Mass.; F. W. Schneider, Hampden Color and Chemical Company, Springfield, Mass.; G. C. Schmid, Falulah Paper Company, Fitchburg, Mass.; Helen U. Kiely, American Writing Paper Company, Holyoke, Mass.; Werner Kaufmann, Kupfer Bros. Company, New York, N. Y.; and F. A. Strovink, American Cyanamid & Chemical Company, Boston, Mass.

Clifford Patch of the Eastern Corporation represented the Maine-New Hampshire TAPPI group. R. G. Macdonald, Secretary of TAPPI talked briefly on the need of local sections to follow the trend of the times and make a reappraisal of themselves in terms of the postwar period when new conditions will arise that will affect organizations quite as much as they will affect the industry itself.

Among those present were the following: N. J. Adams, Joseph Allen, Carl Anderson, R. B. Anderson, Wm. Anderson, P. W. Ayers, Robert Bagg, A. F. Bailey, R. H. Barnes, P. S. Barnhart, Norman I. Bearse, Charles Benoit, M. M. Bixby, S. G. Blankinship, Harold Bolles, P. S. Bolton, J. M. Booth, Ralph E. Briggs, Ann M. Brown, John H. Browne, S. A. Brunell, C. M. Bryan, George Carroll, John F. Carroll, Frank E. Caton, J. F. Carey, Charles Champion, H. S. Chellis, Phyllis Ciechomski, W. B. Colitre, P. A. Collins, D. C. Crosby, Lester W. Crouse, Albert Dempsey, Earl Diener, Randall Doughty, Vance P. Edwardes, Ernest Eyles, Howard Ferguson, Stanley Finn, T. Flaherty, W. L. Foote, L. D. Frisbie, A. H. Gilmore, A. B. Glass, A. Gondyke, B. P. Gooding, H. B. Goodrich, H. M. Grasselt, Donald M. Hall, John H. Hall, John J. Hankard, V. A. Hanson, W. J. Hartman, Ralph Hayden, F. J. Hayden, J. W. Hemphill, Arthur L. Hobday, W. F. Hoffman, C. I. Horton, R. F. Irwin, M. Jacobs, Charles E. Jennings, Carl Johnson, Frank Johnson, H. D. Johnston, A. Justuson, C. H. Kent, Helen U. Kiely, R. E. Kilty, P. J. Kennedy, Jr., Lloyd Lang, W. E. Larkin, A. J. Leishman, A. C. Loomis, E. F. Loomis, Margaret Lynch, R. G. Macdonald, Wm. M. Marshall, Sylvia Mason, John Matthews, M. Craig Maxwell, Benjamin Mayo, R. D. McCarron, C. F. McKenney, H. L. Mellen, James Merrill, O. W. Messner, J. C. Miller, C. C. Mockridge, Frank Moore, Thomas S. Morse, John Mudgett, George Munson, A. Murray, A. H. Nadelman, Ernest O. Nash, H. J. Norton, J. J. O'Brien, John J. O'Keefe, John F. O'Leary, Charles O'Neill, F. W. O'Rourke, H. A. Otto, T. H. Parkhill, D. M. Parrish, C. Patch, F. P. Peterson, J. P. Phelps, F. T. Peterson, Gordon Polson, R. H. Raines, E. C. Reid, A. E. Regnier, Vincent Richards, E. A. Richardson, A. Rowlands, Wm. Russell, F. W. Schneider, L. J. Sharkey, G. B. Shuttuck, L. W. Shattuck, H. A. Shaw, George Schmid, C. P. Slocum, C. H. Smith, Leon H. Smith, L. N. Smith, E. W. Strecker, F. A. Strovink, A. Sullivan, George W. Sullivan, H. M. Sutt, W. F. Sweetland, George A. Thompson, H. B. Todd, Mr. & Mrs. L. B. Tucker, A. P. Wagenknecht, A. K. Warner, W. B. Wescott, Johannes Westergaard, G. W. Williamson, R. C. Winkler, Bemis Wood, J. B. Woodruff, and Arthur Worthington.

"LOOK – we can SALVAGE paper while we make it!



EVERY MILLMAN knows the facts. Paper and paper board stocks used up faster than they can be produced. Inventories close to bottom. Pressure on farmers to cut more wood for paper mills—on users to conserve more paper—on mills to produce more paper. *Now what else can the mills do to improve conditions?*

MILLS—as well as users—can conserve paper—conserve it by conserving the valuable materials that go into paper—preventing spoilage at every step of pulp-making and sheet formation with "bubble-busting" Nopco KF.

NOPCO KF facilitates *volume production* and *protects quality,* too. It assures uniformly fine sheet formation, even with machines running at capacity. At increased machine speeds, entrained air—the common cause of thin spots—is dissipated as effectively as if the stock was being handled at slower speeds. Why? Because Nopco KF keeps "working" *even on the wire.*

53% Fewer Thin Spots

That's the Nopco KF average, due to its super "bubble-busting" power. But see for yourself how Nopco KF eliminates foam or "busts" insidious bubbles in the stock before they reach the sheet to cause thin spots and other surface defects. See for yourself how it makes both for *quantity* and *quality* production—and *at no extra expense.* Order enough for a trial run. Write, wire, phone or use the coupon.

NOPCO

NATIONAL OIL PRODUCTS CO.
HARRISON, N. J.
Please send technical data on use of Nopco KF.

Name.....

Company.....

Address.....City.....

WHEN YOU THINK OF PAPER-MAKING CHEMICALS—*THINK* OF NOPCO

G. B. Co. Opens Baltimore Branch

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., April 24, 1944—With the announcement by Garrett-Buchanan Co. of the opening of new offices of its Baltimore branch at the company's new warehouse 26-30 East Pratt street, comes word that it will be headquarters for complete lines of all American Writing Paper Corporation products in Baltimore and nearby territory in conjunction with its other lines of fine printing papers, washroom specialties, paper cups, etc. Comprising a five-story and basement building, completely renovated throughout, the Baltimore branch affords some 32,000 square feet of floor space for the extensive stock including a completely new modern cutting room, and in addition to all the up-to-the minute equipment, there has been installed a railroad siding. George J. Rittinger is manager of the Baltimore branch.

Crepe Paper Men Get Desist Order

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., pril 26, 1944—The Federal Trade Commission has ordered National Crepe Paper Association of America, 1532 Lincoln-Liberty Building, Philadelphia, and eight corporations which manufacture all of the crepe paper produced in the United States to cease and desist from conspiring to fix uniform delivered prices for their products.

Six of the respondent manufacturers are members of the association. They are, American Tissue Mills, Holyoke, Mass.; Charles T. Brainbridge's Sons, Brooklyn; Fort Howard Paper Company, Green Bay, Wis.; the Papyrus Company, Kenilworth, N. J.; C. A. Reed Company, Williamsport, Pa., and the Tuttle Press Company, Appleton, Wis.

The respondents Dennison Manufacturing Company, Framingham, Mass., and the Reyburn Manufacturing Company, Philadelphia, were members of the association until they resigned in 1939.

The order also is directed against George J. Lincoln, Jr., who has been secretary of the association since its organization by the respondent manufacturers in 1933.

Findings of the Commission are that while the respondents' price-fixing practices had their origin during the period in which the National Industrial Recovery Act was in effect, "the record affirmatively shows that the practices have by mutual agreement been continued by respondents since that time.

Old St. Regis Damaged by Fire

[FROM OUR REGULAR CORRESPONDENT]

POTSDAM, N. Y., April 24, 1944—The old mill property of the St. Regis Paper Company, at Raymondville, was the scene of a fire last week which did considerable damage. The flames fanned by a high east wind quickly swept through the plant and into surrounding buildings. Firemen saved most of the beater room and machinery room sections of the plant but most of the rest was considerably damaged. Several times embers were carried to the water tower on the property but each time the blaze was extinguished by quick action. A row of tenement houses owned by the company were threatened a number of times. A crew of men working for Abe Cooper, of Watertown, who bought the machinery and other parts of the plant, were dismantling the machinery when the blaze broke out. The mill has not been in operation for several years but was operated for many years by the Remington interests and later by the St. Regis Paper Company. Operations ceased several years ago.

PERKINS
HOLYOKE
TRADE MARK REG.

There is no substitute for Perkins Quality

B. F. PERKINS & SON, Inc.
HOLYOKE, MASS., U.S.A.
LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

WPB PERMITS ADDITIONS

(Continued from page 7)

the Port Edwards, Wis., mill of the Nekoosa-Edwards Paper Company ended Saturday morning, April 15, as workers, obeying instructions received from their union, returned to work. Representatives of Nepco Local 59, International Brotherhood of Papermakers (AFL) and the company were to set a date for a meeting of the union's grievance committee with the management to discuss and adjudicate their dispute.

The controversy centered on rehiring of a foreman in the finishing room, where the 132 employes quit work at 3 o'clock Wednesday afternoon, April 12. As a result, the company was forced to shut down the four paper machines Friday afternoon, and to lay off the crews in the beater room, machine room and shipping room. The total of four departments constituted about half the hourly workers of the mill, which employs more than 600 persons.

Precautions Taken Against Forest Fires

All possible precautions against forest fires are being taken in Wisconsin this spring, because of hazardous conditions and the manpower shortage.

H. R. Dahl, Wausaukee, Wis., forest ranger for District 5, which includes Marinette county and parts of Florence, Forest and Oconto counties, said that because of the small amount of snow last winter, the grass is dry and standing, and that with the tremendous amount of slashings in the woods, fires are a grave problem. Since January 1, there have been 32 fires in the district and a total of 475 acres have burned over. Farmers have been warned that they must obtain permits to burn rubbish between the hours of 5 P.M. and midnight.

Publishers of more than 200 weekly newspapers in Wisconsin's smaller communities will establish a state wide waste paper drive this spring on a continuing basis, modeled after the one which has been in operation in Milwaukee county since last January. Preparations for the collection and transport of paper to mills within the state will be completed at the annual meeting of the Wisconsin Press Association at the Schroeder hotel, Milwaukee, Wis., on April 28.

The campaign will be supervised by H. J. Garbutt, Milwaukee, who was appointed recently as state waste paper salvage director, representing the paper industry.

About 500 men and women in the armed forces have received or will receive the April issue of the Lakeview Oversea-er. This is a monthly newspaper containing news about the Lakeview mill of Kimberly-Clark Corporation, Neenah, Wis., and its men and women in the services.

To Study Control of Blight Disease

A disease control laboratory will be opened next month at Goodman, Wis., to determine what is causing a serious burn blight which has destroyed several thousand acres of jack and Norway pine in northeastern Wisconsin. Cooperating in the project are the University of Wisconsin, the United States Department of Agriculture and the state conservation department. E. L. Chambers, state entomologist, said the worst damage has been done to tracts in Marinette, Oconto, Florence and Forest counties.

We're in it for the duration

SINCE 1828

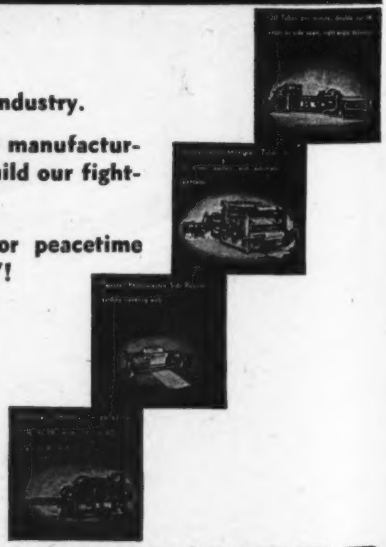
Continuously We Have Served The Paper Industry.

Since War II was declared we have used all our manufacturing facilities, and done our small part to help build our fighting machine for war.

At the same time we have been planning for peacetime equipment and improvements NOW!

We have some of our machines available to produce new machinery for civilian products.

Paper Machines
Paper Bag Machines **Paper Cutters**
Can be built with a PDIA Priority rating.



THE SMITH & WINCHESTER
MANUFACTURING COMPANY
PLANT AND OFFICES AT SOUTH WINDHAM, CONNECTICUT

To Hold Ladies Night

The Michigan Division of the American Pulp and Paper Mill Superintendents Association will hold its Annual Ladies Night Dinner Dance on Saturday evening, May 6, 1944 at the Park-American Hotel in Kalamazoo.

Allen Milham, president of the Bryant Paper Company will be the toastmaster of the evening. Bob Buss of the Hercules Powder Company and Jack Dickson of the R. T. Vanderbilt Company are in charge of the arrangements for the cocktail hour which will begin at 7:00 P.M. in the East Room.

After the cocktail hour, dinner will be served in the main dining room, followed by dancing to the strains of a popular local orchestra.

The floor show to be held at the intermission will feature a Barber Shop Quartet.

To Control Shipping Sacks

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 26, 1944—The Paper Shipping Sack Industry Advisory Committee approves in principle the issuance of a proposed preference rating order designed to facilitate the acquisition of paper shipping sacks for essential purposes, Burton A. Ford, chief of the Paper Shipping Sack Section of the War Production Board's Paper Division, reported today.

The necessity for the assumption of definite control over the use of paper shipping sacks is due to the shortage of kraft pulp and paper, and the demands for paper sacks suitable for the shipment of a number of essential commodities, Mr. Ford explained. He pointed out that in general this industry's output goes to the packaging and shipping of foods, chemicals, rubber, mining and building materials, as well as the military and the Foreign Economic Administration demands.

The new order will apply to all paper shipping sacks, such as single wall flour, duplex and multiwall for all purposes, as well as sacks containing protective papers, such as asphalt laminated sheets, capable of carrying some 250 materials all of which require strong and, in many cases, moisture-proof paper.

As a basis for program determination, a preference rating order was found necessary, Tate Robertson, of the Forest Products Bureau, said, and he pointed out that such paper is a critical common component of many industries and hence a measure establishing essential priorities is required after careful consideration of its uses.

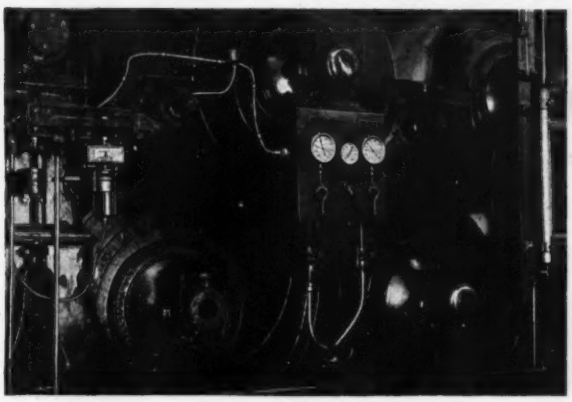
After an analysis of the proposed order, it was the consensus of the meeting that steps should be taken to expedite the consideration of such an order by the WPB Requirements Committee and final consideration be given it by the advisory committee at its next meeting, scheduled for May 9.

Rex W. Hovey, director of the Paper Division, told the members present that the production of the essential kraft paper must be built up to meet the exceptional demands placed upon it through the use of paper and paperboard as a substitute for so many other packaging materials.

"We need 50,000 more tons a month than we are getting," he said. At the same time, he emphasized the necessity of cutting out all illegitimate and unnecessary uses of this type of material.

STICKLE DRAINAGE AND CONTROL

EXTREMELY CLOSE MOISTURE CONTROL



Simple in construction. No delicate mechanism to get out of order.

● Stickle Control of moisture content is both accurate and dependable. Performance of Stickle Tension and Thermal Control is so positive that it can be installed on a guarantee of control within a variation of one-half of one percent. Authenticated tests made in various plants often show the variation to be within closer limits. Tests made on 4.8 Bleach Gray Linen Condenser Paper being run on a machine equipped with Stickle Tension and Thermal Control indicated a moisture variation of only one-fourth of one per cent.

Stickle Tension and Thermal Control supplies positive uniformity of moisture content. After the desired moisture content is established, production may be continued at that point with little manual attention.

Close control of moisture with stabilization of steam flow supplied by Stickle Equipment eliminate cockling, reduces curling and shrinkage and, to a very great degree, prevents drier snap-offs. Results: Increased production efficiency, improved quality and decreased costs.

Stickle

STEAM SPECIALTIES COMPANY

2245 VALLEY AVENUE • INDIANAPOLIS, INDIANA

FOR 40 YEARS REDUCING STEAM COSTS IN PAPER MILLS

SPECIAL TRAPS
speed air removal on paper dryer rolls

● Developed specially by Armstrong for paper dryer roll service, these traps have extra air elimination capacity in addition to their regular function of removing condensate without steam loss. Results are higher production and lower costs, through faster heating, better quality paper and fuel savings. Users say there is nothing like this trap for dryer roll service.

Other production aids for paper industries: Armstrong compound traps for digesters; evaporators, etc. . . . forged steel traps for high pressure power plant service . . . and regular traps for heaters, cooking tanks, space heating coils, unit heaters and other equipment.

INVALUABLE FOR YOUR FILES—write for copy of Armstrong Trap Book, illustrating construction, operation and application details.

ARMSTRONG MACHINE WORKS
818 Hoffman St., Three Rivers, Mich.

ARMSTRONG
STEAM TRAPS • DRYER DRAINAGE SYSTEMS • MOISTURE CONTROL SYSTEMS • HUMIDIFIERS

Alaska Pulptimber for Sale

The Forest Service, U. S. Department of Agriculture, has decided to block out a large pulptimber unit on the Tongass National Forest in southeastern Alaska for investigation by representatives of the pulp and paper industry who may desire to study at this time the post-war economic possibilities for the industry in this new field.

Designation of a specific timber unit will enable interested parties to make a detailed examination on the ground of the quality and loggability of the timber that would be available. It will also provide a definite basis for discussion with the Forest Service on the conditions which are to apply to any offerings of Alaska pulptimber in the near future. The work of blocking out the unit will start at once and is expected to be finished by midsummer.

If responsible prospective operators, as a result of their investigations, desire to have the unit placed on sale and if such action appears to the Forest Service to be in the public interest at that time, the unit will be offered for sale through advertisement calling for competitive sealed bids. Advertisement will not be started before December 1, 1944, in order to provide ample time for field investigation and later discussion.

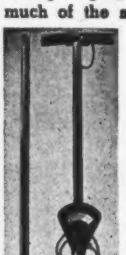
Additional pulptimber units can be laid out in several sections of the Tongass National Forest if and when demand warrants.

The Tongass National Forest, in southeastern Alaska, is believed to present an opportunity for the development of a large, permanent pulp and paper manufacturing enterprise founded on a sustained supply of timber. The forests are composed almost entirely of pulping species, roughly 75 percent hemlock, 20 percent spruce and 5 percent cedar. The industry would have cheap log transportation along protected sea channels between the woods and the mill, ocean shipping for outbound paper products, and inbound mill supplies, water power for mill operation and an equable climate that permits almost year-round logging and unhindered mill operation throughout the year. In view of these favorable features, the plans of management for the timber resources of the Tongass National Forest are being drawn primarily to supply permanently the raw material for pulp and its products. The plans will provide that the wood be manufactured in Alaska, that economically sized and well-equipped plants be installed, and that operations be so conducted as to promote stabilized employment for woods and mill workers and the building up of thoroughly modern industrial communities.

The unit to be laid out at this time will comprise a number of tracts located in the general vicinity of Ketchikan. Total volume of standing timber to be included will be an estimated 1,350,000,000 cubic feet, roughly equal to 1,350,000 cords of peeled wood or to 7,500,000,000 feet board measure. This volume is deemed sufficient for the needs of a sulphite or sulphate pulp mill with a capacity of 150 tons daily during the first 10 years of operation and 525 tons daily during the following 40 years. The expectation is that the sale contract will allow a cutting period of 50 years. The size of the unit as finally offered for sale may be reduced to fit the needs of a plant of smaller capacity at the request of an applicant, if such action appears desirable to the Forest Service; otherwise the purchaser must agree to

PAPER QUALITY
vs.
NEW HELP

Faulty drying roll temperatures that cause much of the spoilage and reduction in quality of paper can be located quickly and easily with the CAMBRIDGE Surface Pyrometer. With the rapid labor turnover of today it is important to reduce the human equation to a minimum. Checking roll temperatures with this accurate, easy-to-use instrument permits increased production with safety. Send for descriptive bulletin.



CAMBRIDGE
SURFACE PYROMETERS
Cambridge Instrument Co., Inc.
3732 Grand Central Terminal, New York, N. Y.

meet the above specifications as to plant installation and enlargement.

To show definitely the character of the timber that will have to be cut during the early and more critical period of the new industry, the boundaries of those portions of the sale unit which are to be cut over in the first 25 years of operations will be designated at the time the sale unit as a whole is being selected. The remaining portions of the area under sale will be divided into actual logging areas currently as cutting progresses during the last half of the sale period.

In laying out this timber sale unit as well as other units in the future, the Forest Service will exclude those areas in southeastern Alaska on which scenic and recreational values are predominant. Along the heavily traveled narrow sea channels, and along roads and the shores of recreational lakes and streams, cutting will either be excluded entirely or permitted only under some form of selective logging which will prevent unsightly scars or openings in the timber cover. Logging will also not be allowed to interfere with the salmon spawning streams which help support the important salmon fishing industry of this region.

The total timber stand on the Tongass National Forest is estimated to be 78,500,000,000 feet B.M.

A surety performance bond of $50,000 must be provided by the purchaser.

Further information on the proposed pulptimber sale can be obtained from the Chief, Forest Service, U. S. Department of Agriculture, Washington, D. C., or the Regional Forester, Forest Service, Juneau, Alaska.

The Use of Chlorine

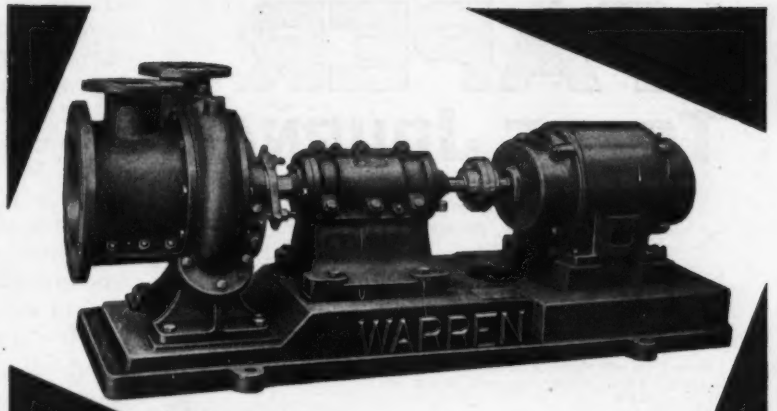
[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 26, 1944—To clarify the intent of War Production Board regulations and restrictions as to the use of chlorine in manufacturing pulp, paper and paperboard, an interpretation to Limitation Order L-11 was issued by the WPB Paper Division at Washington, D. C., today.

Limitation Order L-11 requires that the brightness of bleached sulphite and bleached sulphate or waste paper pulp when used for conversion into bleached papers, may not exceed 74 on the brightness scale. The interpretation points out that the brightness may be determined for any individual batch of pulp, where a batch system is used, or the average of any eight-hour period, where a continuous system is used. Similarly the brightness for bleached soda pulp is limited to 70, Mr. Beeman said.

The gumming grade of paper and paperboard, listed in the order under the "book" division, may not be made to exceed a brightness of 68, according to the interpretation, which also points out that there is no restriction against using any type of bleached pulp in that grade. Two types of waxing paper, MF and MG, listed under Sulphite and bleached Kraft, may not be made to exceed 67 in brightness, and, as with waxing papers, any type of bleached pulp may be used.

The requirement that pulp bleached with chlorine may not be used in producing kraft gummings, tape and waxings, is interpreted as referring only to unbleached grades of paper as distinguished from book, sulphite or bleached kraft grades.



4 OUNCE
TOLERANCE
ON 9 POUND ALL RAG STOCK

. . . met successfully with a
WARREN CENTRIFUGAL MACHINE CHEST PUMP

That's a record. From a full to empty chest, a variation of 12 feet, the output of this Warren Pump* was so steady that required tolerance was easily and consistently met. And the sheet was more uniform than obtained with the plunger pump previously used. Records like this are not exceptional. All Warren machine chest pump installations have been notably successful.

* Installation in a large Eastern mill.

WARREN PUMPS
WARREN STEAM PUMP CO., INC., WARREN, MASS.

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger
EDITOR

No. 118 April 27, 1944 No. 17

COMING EVENTS IN PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

CHICAGO PROFESSIONAL PAPER GROUP—First Monday of each month except July and August at Chicago, Ill.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION—25th Anniversary Convention, Edgewater Beach Hotel, Chicago, Ill., May 24, 25 and 26.

ECONOMIC CONTROL

Price control is one of the most irritating measures in the war economy. The effect is in greater part found in its arbitrary restrictions which curtails individual independence and curbs initiative and, of course, the war is the major cause. The blame is, therefore, not entirely in the Act itself, nor in the broad sweep of its administration. Considerable ground for criticism has been directed, however, to the Office of Price Administration in the manner in which many of the agency's ruling and price-shifting practices have been and are being made. Last Thursday, for example, the poultry markets were thrown into confusion by an OPA order to raise prices, followed by an order rescinding it and by a third order restoring the price named in the first directive. Although this was, perhaps, a minor error the OPA has, unfortunately, been frequently severely criticized for serious lapses of sound judgment, which a little common sense would have avoided. Most of the inconsistences and errors in the administrative policies in the various governmental agencies occur because of the ill-considered decisions of immature executives.

There is too much incompetency to obtain a very high standard of efficiency. With so large an armed force, considered imperative for winning the war, a remedy seems scarcely possible to apply except through a political change.

The difficulties of the Office of Price Administration were greatly increased by the "hold the line" order of the Pretsident and what has seemed for some time to be an almost subservient adherence to the "Little Steel" formula. Although the OPA has extend its price directives beyond the powers granted that agency by Congress, it is contended by some of its critics, the rising cost of living has created strong resentment within organized labor. The question of what is a fair price level, is confused by the difference in the cost of living data, as compiled by the Department of Labor, and by the Labor Unions, the index of the latter being about twice as high as the former. From a practical viewpoint, it seems clear that all price control measures have been taken to keep prices stablized at too low levels. The conclusion reached by some of the most outspoken critics of both the Office of Price Administration's directives, and those issued by the newer Office of Economic Administration, of which Fred M. Vinson is director, attack various rulings of these agencies as arbitrary, unfair and not in the interests of the nation.

The suits filed by the Office of Price Administration against various manufacturers in many fields for alleged violations of price ceilings have been the target of criticism. The Office of Price Administration and the Emergency Price Control Act were criticized by Special Master Peter B. Olney in a report filed April 22 in the U. S. District Court, in which he recommended judgment in favor of two candy manufacturers, against which the OPA had filed suits to compel compliance with record-keeping provisions of its regulations. Mr. Olney pointed out that while he recognized the magnitude of the task of the OPA and the importance of its fight against inflation, he expressed deep concern and regret over the filing of the suits," because the exercise of good judgment would have prevented this litigation. The prosecution of suits such as the one covered by this report is not conducive to public opinion backing the law, but on the contrary is conducive to adverse public opinion. . . " With the necessary wartime regulations and restrictions it is hard enough for people to do business at the best. It is such a lack of the exercise of good judgment as this record discloses as gives just cause for the criticisms of governmental agencies, about which we hear a good deal these days. No law can be enforced unless it has the backing of public opinion—witness the Prohibition Act. The Emergency Price Control Act of 1942 requires for its enforcement the solid backing of public opinion."

In response to the criticism of Representative Boren of Oklahoma, in reference to the 2% profit for industry controversy, Stabilization Director Vinson stated in part that, "No maximum margin of profit has been 'allowed for essential consumer goods, in cases where prices must be readjusted.' A maximum margin of 2% over cost has been allowed to manufacturers of essential textile and apparel items in cases where mandatory production orders have been issued by the War Production Board. . . . This does not mean that even in cases where manufacturers are required by the War Production Board to produce specific items, they will be limited to a profit of 2% over cost. . . . I do not assume that the reconversion program for consumer durable goods will be operated under any such mandatory basis."

In reply Representative Boren said in part: "Why permit a principle like an arbitrary maximum of 2% profits before taxes to remain in a fundamental order of the Office of Economic Stabilization, when it is so inconsistent with our system of free competitive enterprise and reasonable profits? Why not publish the directive, and spell it out once and for all time so that it clearly applies only to textiles and human apparel, and manufacturers will not be wondering whether or not they will be affected by this on converting from war to civilian goods production."

Waste Men To Meet in Chicago

Arthur U. Claghorn, chairman of the Western Division of the National Association of Waste Material Dealers, Inc., and Morton A. Friedman, secretary, have announced that arrangements are being made for the largest gathering yet sponsored by the Western Division of N.A.W.M.D.

On Monday, May 8 at the Hotel Sherman, Chicago, divisional meetings will be held in the afternoon, and a dinner in honor of the association's new president Paul J. White, will be held Monday evening.

Both the president and the managing director of the Association will be in Chicago for these meetings and for the dinner.

It is expected that representative dealers in all branches of the trade throughout the Middle-West will be in attendance and the committee in charge is extending a most cordial invitation to non-members to attend these meetings and the dinner.

Further information will be made available later. Eastern members planning business trips in the West would do well to time them so as to attend the meetings and dinner on May 8.

Yale Buys Kron Scale Business

W. Gibson Carey, Jr., president of the Yale & Towne Manufacturing Company, Chrysler Building, New York, announced a few days ago that the purchase of the scale business of the Kron Company of Bridgeport, Conn., had been consummated.

The Kron Company has designed, manufactured and sold high-quality industrial scale equipment for more than a quarter of a century. "Scales of the springless type with direct-reading dials, like those made by Kron, have been preferred by American industry for a great number of years because of their continuing accuracy and many time-saving advantages," said Mr. Carey.

According to the announcement no changes in the line are contemplated, except for such natural developments which grow out of industry's needs.

Amro Paper Co. Sold

[FROM OUR REGULAR CORRESPONDENT]

LANCASTER, Pa., April 24, 1944—The Amro Paper Company's factory with all equipment in Manheim Township, was sold for $12,500 Friday to M. E. Musser, attorney during the April sheriff sales in the court house. Bidding was spirited despite the fact only 35 persons, including a dozen attorneys, attended the sales.

Attorney Musser bought the property for Consumers Box Board Company or H. J. Pierson.

Production Ration Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1944		Corresponding Weeks—1943	
March 11	89.1	March 13	89.8
March 18	92.2	March 20	88.9
March 25	90.3	March 27	90.6
April 1	88.0	April 3	88.6
April 8 (Revised)	88.2	April 10	89.9
April 15	*85.0*	April 17	89.3

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1943	87.2	88.9	89.5	88.7	91.4	84.8	84.3
1944	89.6	89.6	90.1	....	....	....	....

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1943	91.0	88.3	89.6	89.6	82.0	87.8

COMPARATIVE YEARLY SUMMARIES

	1937	1938	1939	1940	1941	1942	1943	1944
Year to Date	89.6	67.3	79.9	85.0	89.9	103.1	88.7	*89.8*
Year Average	79.8	71.5	83.4	85.6	97.4	90.4	87.8	

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1938	56	63	63	60	60	59	59	69	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	83	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	94	94	96	94	89	96	94	94	93	87	93
1944	90	96	95										

Week ending March 11, 1944—95
Week ending March 18, 1944—95
Week ending March 25, 1944—97
Week ending April 1, 1944—93
Week ending April 8, 1944—94
Week ending April 15, 1944—92

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

J. L. Perkins To Be General Manager

President J. Lewis Perkins has been elected general manager of B. F. Perkins & Son, Inc., Holyoke, Mass. William Woosnam has been elected general sales manager.

Mr. Perkins, who has been President of the company for many years, has assumed the additional duties of management. He is well known in both the paper and textile industries.

Mr. Woosnam, who has been with the company in charge of textile sales for 17 years, and more recently in charge of production on Navy and Merchant Marine contracts, was a member of the American Commission of Industrial Development sent to Russia 15 years ago.

The Perkins Company manufactures calender rolls, a large line of textile and paper finishing machinery, Mullen testers, and Man coolers used largely in steel production.

R. B. Richardson Elected Vice Pres.

Robert R. Richardson, who has held the title of secretary and director of purchases of the Gardner-Richardson Company, Middletown, Ohio, was elected to the office of vice president and secretary at the company's annual meeting.

Mr. Richardson started his connection with his present company on January 1, 1917. His present duties as director of purchases will continue.

All other officers and directors of the company were re-elected for the ensuing year.

The active participation, as an officer of the company, of E. T. Gardner, Jr., assistant to the president, will be at least temporarily discontinued, having just recently been commissioned Lt. (j.g.) in the United States Navy.

"SPECIFY CYANAMID'S BENOWAX"

FOR MOISTURE-VAPOR RESISTANCE IN WRAPPING AND CARTONING MATERIALS

Developed for the specific purpose of providing dependab resistance to moisture-vapor penetration in wrapping an cartoning materials, the various grades of BENOWAX are bo low in cost and flexible even at low temperatures. Althoug not recommended as an exposed coating material for som purposes, BENOWAX when used as a laminating substanc effectively retards the transfer of moisture-vapor without i pairing flexibility in any way.

The following characteristics make BENOWAX outstandi as a laminating material:

1. When used as a laminating agent, the moisture-vapor resistan of BENOWAX compares favorably with many films ordinarily co sidered moisture-vapor proof.
2. It provides a certain degree of grease and oil resistance.
3. It exhibits good pliability, fair to strong adhesive power, depen ing upon the grade selected.
4. Some grades protect package contents from deterioration due light.
5. It is low in cost (a fraction of that for many materials that ha been used for rendering paper moisture-proof).

Certain of the various grades of BENOWAX . . . an amorpho petroleum wax . . . have become so important in the manu facture of moisture-vapor proof wrappings for war good that they are available only for such military uses.

There are, however, other grades of BENOWAX . . . notabl F, L, P and Q . . . that may be obtained for less essential use Accordingly, you may find that a BENOWAX will serve you purpose without modification. However, should they no meet your exact specifications, they may be used as extender for the more critical micro-crystalline waxes. In this way, the can help you through these days of emergency replacement

TYPICAL CHARACTERISTICS OF VARIOUS GRADES OF BENOWAX

	Subject to Allocation			Not Subject to Allocation		
	BENOWAX C	BENOWAX D	BENOWAX F***	BENOWAX L	BENOWAX P	BENOWAX Q
Gravity, Liquid State (A.P.I, Theor. corrected to 60°F.)	35	34.3	35	8.8		
Melting Point (A.S.T.M. D127-30°F.)	140-45	150-55	145-50	*157-63	153	135
Penetration (A.S.T.M. D5-25, 77°F. 100G, 5 Sec.)	35-40	15-20	50-60	30-35	141	34
Viscosity (S.U.V. at 210°F.)	60-70	76	60-70	**430	79	52
Color (N.P.A., melted state)	4 dilute	——	4 dilute		7-8	4
Color (solid state)	Brown	Light Brown	Brown	Black	Amber	Light Amber.
Flash (O.C.°F.)	500	525	500	540	555	450
Neutralization No. (No. Mg KOH per gram)	.20	.02	.20	1.8	0.02	0.01
Carbon Residue, %	.15	.50	.15	3.5	0.13	0.08
Iodine No. (Mod. Hanus)	5.5	7.0	5.5		4.4	3.9
Specific Gravity (60° / 60° (Theor.) Liquid State)	.849	.853	.850	1.008	0.898	0.905

*Softening Point (A.S.T.M. D-36-26) **350°F.

***Subject to allocation but in ample supply

American Cyanamid & Chemical Corporation

(A Unit of American Cyanamid Company)

30 ROCKEFELLER PLAZA · NEW YORK 20, N. Y.

DISTRICT OFFICES: Boston, Mass.; Philadelphia, Pa.; Baltimore, Maryland; Charlotte, N. C.; Cleveland, O.; Chicago, Illinois; Kalamazoo, Michigan; Detroit, Michigan; St. Louis, Mo.; Azusa, Cal.; Seattle, Wash.

WAXES · WAX SIZES · ROSIN SIZE · SYNTHETIC RESINS · CASEIN · ALUM · SULPHONATED OILS · FILLERS · DEFOAMERS · SODA ASH · CAUSTIC SODA · SALT CAKE · ACIDS · CLAYS · SATIN WHITE · AEROSOL WETTING AGENTS · CALMICRO (CALCIUM CARBONATE) AND OTHER PAPER CHEMICALS

Reg. U.S. Pat. Off.

Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Wet Tensile Breaking Strength of Paper and Paperboard

Revision of TAPPI Tentative Standard T 456 m-42

This method is suitable for determining the tensile strength of paper and paperboard after they have been wetted with water or other liquid. The results are of special interest in the testing of paper towels, blueprint and similar papers, and others which are subjected to stress after being moistened.

Depending on the use requirement, the sample may be immersed in the liquid for a given time and tested, whether it is then completely wetted throughout or not. However, unless otherwise noted, the wet tensile breaking strength is assumed to be performed on the sample after it has been completely wetted throughout.

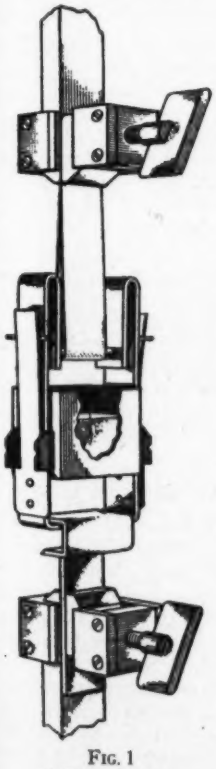


FIG. 1
Finch Device

Definitions

For purposes of this test the ultimate wet strength means the strength of the material after complete saturation with a liquid. Normal wet strength means the strength of the material after it has been wetted to an extent comparable with normal use conditions. For certain materials, such for example as tissue paper and unsized papers, the ultimate wet strength and the normal wet strength may be the same.

Apparatus

1. *Tensile Tester* as specified in TAPPI Standard T 404 m. If the paper is very weak, remove the detachable weight and its pin from the pendulum and recalibrate the instrument as therein specified.

2. *Finch Wet-Strength Device.* The device, Fig. 1, consists of a stirrup about 1½ inches wide and 3 inches long, made of two metal straps which support horizontally a cylindrical rod, 3/16 inch (5 mm.) in diameter and a little more than 1 in. long. Between the straps is a small vertically movable container for holding water or other liquid. The liquid container locks in its uppermost position, so that the horizontal rod is immersed in the liquid to a depth of at least ¾ inch. A metal tongue at the bottom of the stirrup permits it to be clamped in the lower jaw of a tensile tester.

3. *Blotting Paper.* That specified in TAPPI Standard T 205 m is suitable.

4. *Cylindrical Brass Weight,* 500-gram, about 40 mm. in diameter.

Test Specimen

The specimens for test shall be strips cut accurately and parellel to within 0.1 mm. and with clean edges, in each principal direction of the paper, and over 120 mm., preferably 150 mm., long. The width shall be 12.7 mm. (0.5 inch), 15.0 mm. (0.59 inch), or 15.9 mm. (0.625 inch). They shall be selected so as to be representative of the sample.

Procedure

The test shall be made in accordance with the procedure given in TAPPI Standard T 404-m, using strips that have been wetted in liquid having a temperature of 23 ± 2° C.

Use the Finch device for wetting tissue papers, paper towels, and other papers that are difficult to handle when wet. Clamp the device in the lower jaw of the tensile tester. Place the liquid container in its lowest position and nearly fill it with the liquid. Loop the dry test specimen under the dry horizontal rod and clamp the two ends of the specimen in the upper jaw of the tensile tester. Raise the liquid container so that it locks in its uppermost position, thereby immersing the looped end of the specimen to a depth of at least ¾ inch. At the end of the immersion period, proceed with the test with the liquid container in its uppermost position. The indicated strength is divided by 2 to obtain the wet strength of a single strip.

To wet materials that can be handled without difficulty when wet, and paperboards, wholly immerse each test strip in a shallow dish of liquid. After the predetermined time of wetting, withdraw the strip,

This revised method has been approved as a tentative standard by the Paper Testing Committee. Criticisms are earnestly requested and should be sent to R. G. Macdonald, Secretary, Technical Association of the Pulp and Paper Industry, 122 E. 42nd St., New York, N. Y. Reprints of this standard may be obtained from the Secretary at 25 cents each.

lay it flat and straight on a pad of blotting paper, cover with a sheet of blotting paper, and pass a 500-gram cylinder over the cover, taking about 1 second to complete the rolling.

ULTIMATE WET STRENGTH

For ultimate wet strength, determine the required time of immersion by immersing test strips for various periods of time and determining their tensile strength at the end of each period until no further significant loss in tensile strength occurs. (Tests on 5 strips cut in one direction of the sheet, preferably the cross direction, are sufficient for the preliminary tests.) The maximum time so found shall be used as the time of immersion for the final test.

Note: The use requirements of the sample, when known, will be a guide for the time of immersion for ultimate wet strength. For heavy papers or paperboard which have been treated to obtain a high wet strength, such as wrapping paper and tag stock, it may be necessary to make preliminary tests after immersion for 2, 4, 8, 16, and 24 hours. In making preliminary tests on papers whose use requirements are unknown, the increase in time intervals should be sufficient to be determinative. In general, each succeeding time interval should about double that of the previous one.

NORMAL WET STRENGTH

To obtain normal wet strength values, the time of immersion for paper towels shall be 15 ± 3 seconds, and for blueprint and other photographic paper 20 ± 2 minutes, using water in each case for the immersion liquid.

Report

Results obtained on strips cut in the machine direction shall be reported as wet tensile strength, machine direction, and results obtained on strips cut in the cross direction shall be reported as wet tensile strength, cross direction. The average value of the breaking load results shall be reported in kilograms per 15 mm. width, or pounds per inch width, to the nearest 2% of the total reading. (Kg. per 15 mm. x 3.73 = pounds per inch). The average, maximum, and minimum wet tensile strength for each of the principal directions of the paper shall be reported. Report also the time of immersion. In addition, for papers treated to obtain high wet strength, report the wet tensile strength as a percentage of the usual (dry) tensile strength as determined by TAPPI Standard T 404 m.

TAPPI Notes

Thomas B. Dorris, formerly of the Franklin Research Company is now chemical engineer for Sprout, Waldron & Co., Muncy, Pa.

James P. Rubush, formerly of Doughitt-Gray-Jensen is now vice president in charge of sales for the Goslin-Birmingham Manufacturing Company, Inc. 350 Madison avenue, New York, N. Y.

T. A. Howells, formerly of the Munising Paper Company has joined the staff of the Institute of Paper Chemistry, Appleton, Wis.

Arthur F. Smith, sales engineer of the General Electric Company died some time ago at his home in Wyoming, Ohio.

The Signode Steel Strapping Company has become a sustaining member of the Technical Association of the Pulp and Paper Industry. The Company was founded in 1912. The first seals and ⅜ inch strapping were made from plain coppered plated metal. The company expanded greatly in the last war, following which factories were opened in France, England and Germany. Today the Signode system of steel strapping encompasses all phases of shipping in almost every packaging industry. In a single recent month 30,144,000 seals were produced. The officers of the company are John W. Leslie, president and John S. Gorman, vice president.

Other companies to become sustaining members of the Technical Association this year include the Southern Pulp and Paper Journal, Wm. Cabble Ex. Wire Company, Kidder Press Co., Inc., John E. Rhoades & Sons, General Printing Ink Company, Warren Steam Pump Company and the Allis-Chalmers Manufacturing Company.

The Chicago Professional Paper Group will meet on Monday, May 1, at 6:30 P.M. at the Hotel Hamilton, Chicago, Ill. Otto Kress, technical director of the Institute of Paper Chemistry will talk on the fundamentals of pulping.

Canada May Cut Paper Board Use

TORONTO, Ont., April 24, 1944—In spite of all the conservation programs and salvage collections, the Wartime Prices and Trade Board has found it necessary to impose further restrictions and prohibitions on the use of paper board for containers and packaging, according to common talk about the trade these days. It is generally expected that within a very short time, perhaps before the end of next week, new restrictions and regulations will be announced.

There have been a number of directives issued by individual administrators of the various branches of the paper industry, limiting the use of paper board for certain industrial uses. The new order will cover the entire field and will considerably extend the area of restriction. It will also, for the first time, prohibit the use of paper board in certain types of container. It is not expected that the order will apply to shipping cases nor to containers other than those made of paper board.

Under existing directives, the over-all reduction in paper board for use in containers and packages restricts use by approximately 17%. In some cases, notably in retail boxes, the present cut-back is 35%. Under the new order it is thought likely that the present retail cut-back will stand, but that there will be a number of important variations above or below the 17% figure so far as other businesses are concerned. Discussions are not far enough advanced to indicate finally just what these exact quotas and prohibitions will be for individual groups or users. Among those industries most likely to be affected, the drug industry is mentioned as one that will come in for some drastic restrictions.

Canadian Woodsmen To Stay in U. S.

WASHINGTON, D. C., April 26, 1944—Paul V. McNutt, chairman of the War Manpower Commission, and the Honorable Humphrey Mitchell, the Canadian Minister of Labor, announced today that arrangements had been perfected by which Canadian border woodsmen now working in the forests of the Northeastern region of the United States would be authorized to remain there without interruption notwithstanding that present exit permits expire on April 30. It was further announced that the agreement provided for the continued maintenance of 3,500 men in the woods for an indefinite period.

Mr. McNutt expressed keen satisfaction over the results of the negotiations and added that the Canadians had fully cooperated in thus assisting the War Manpower Commission in its efforts to relieve the acute woods labor shortage in this highly critical area.

The Mechanism of Flow of Paper Stock in Pipes*

By John L. Gray[1] and J. A. Van den Akker[2]

Abstract

Previous work at the Institute on surface friction of stock against solid surfaces has been extended to higher velocities and higher consistencies through the use of larger scale equipment. Two regimes of flow exist—viz., one in which "plug flow" always occurs, and another in which either "instantaneous plug flow" or "equilibrium" flow takes place. For a given pulp the differentiation between these two regimes depends upon the consistency of the pulp; above a critical consistency, and at velocities above a critical value, freshly mixed stock displays the instantaneous type of flow for a period of time depending upon the properties of the stock and the velocity; after this period of time the flow spontaneously transforms to the equilibrium class of flow, which is characterized by a much lower surface friction and associated with a visually different type of motion of the stock. Data relating to the phenomenon are presented, and a theory of the flow of stock in pipes is presented. The implications of this theory with regard to test measurements of friction head loss and the mill use of such test data are discussed.

Complete knowledge of the processes involving the flow or movement of stock—the economic transportation of stock through pipes, the washing, screening, beating, and refining of stock, and the forming of the paper on the machine—requires an insight into the mechanism of such flow. This might well be termed the "hydraulics" of stock. If the flow properties of stock were similar to those of water, the problem would be simple. However, little of the hydraulic theory which has been developed for water will apply to stock. Thus, the general problem lies in obtaining a theory of the manner of flow or rheology of stock which will apply to and explain all the experimental facts concerning the flow of stock.

The importance of such a workable theory can hardly be over-estimated, because its application would be so wide and varied. The problem of friction loss in pipes is of itself a highly important one, especially in cases where centrifugal pumps are employed. The present widespread use of such pumps intensifies the importance of this problem. The economic operation of a centrifugal pump depends on utilizing a pump whose optimum range of operating head, which is narrow in all cases, is within the total head variation encountered in its application. The head resulting from friction of the stock is always a large item, and small errors in the data used for its calculation are reflected in considerable misjudgment of the total head. As a result, the pump will not be operating at its greatest efficiency. Thus, the value of correct data and correct interpretation of the data on friction loss of stock in pipes is obvious when the amount of stock being transported in pipes by the pulp and paper industry is considered. A proper theory of the flow properties of stock is essential for this.

The history of this problem shows that the general approach has been one of purely practical measurements of pressure drops in specific pipe setups, using a pulp with various consistencies at different velocities. The value of these measurements lies in their practical application to the design of pipe lines, but even this is questionable in view of the wide discrepancies in the published results. The practical approach has failed to shed any light on the fundamental laws of friction in the flow of paper stock through pipes.

A new and more fundamental approach was studied by Baldwin and Van den Akker *(1)* and Delevanti *(2)*. Working with concentric cylinder apparatuses, most of the studies by Baldwin and Delevanti were concerned with the phenomena of surface friction at a stock-metal or stock-solid interface. Baldwin differentiated between the internal shearing friction of stock against stock and the surface friction at the interface of the rotating cylinder and the stock. His work demonstrated that the controlling factor in stock friction is the surface friction. Delevanti extended the work on surface friction. The chief limitations of the equipment designed by Baldwin and Delevanti were that consistencies above 2.2% could not be investigated. Delevanti noted a bunching tendency of stocks at consistencies above this value, and, of this, wrote, "In connection with this bunching effect, it was also noted that, in the unstable velocity region, the . . . (torque arising in friction) . . . increases as violent stock shear takes place and drops to a lower value as the shear disappears." The importance of this observation is demonstrated in the present work.

The work of Baldwin and Delevanti indicated that larger cylinders, larger space between cylinders, and direct measurement of torque required to drive the rotating cylinder were required. The purpose of the thesis discussed in this report was to design and construct more adequate equipment and apply it to the further study of the surface effect on the flow properties of stock.

Apparatus

The general plan of design is to rotate a cylinder, 6 inches in diameter, and 14 inches long, in a cylindrical container 1.5 feet in diameter holding stock up to a level which permits 1 foot of the rotating cylinder length to be submerged in the stock. The torque to the rotating cylinder is measured with a calibrated dynamic torque spring coupling between the rotating cylinder and the source of power. The power source is a variable speed, 0.5-h.p. direct-current motor.

---

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.

A portion of a thesis submitted by J. L. Gray in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Master of Science from Lawrence College, Appleton, Wisconsin, May, 1943.

[1] Student, The Institute of Paper Chemistry, Appleton, Wis. Present address: B. F. Goodrich Company, Louisville, Ky.

[2] Research Associate, The Institute of Paper Chemistry, Appleton, Wis.

The plan, front elevation, and left side views of the apparatus are shown in the assembly drawings in Figs. 1, 2, and 3. A photograph of the complete instrument is shown in Fig. 4. Rotation of the vertical drive shaft is effected through the use of bevel gears having a step-down ratio of 2:1. Details of the split vertical shaft, which carries the torque spring device, are shown in Fig. 5. Both the lower and upper halves of the shaft are supported by a pair of ball bearings; the lower bearing carrying the lower half of the shaft is a thrust bearing.

The stock container is a galvanized can 23 inches high and 16 inches in diameter. It is fitted near the bottom with a ¾-inch pipe, with a gate valve at the end, so that the container may be emptied with ease. The whole apparatus is mounted on a wooden table 18 inches high, so that the container can be emptied into buckets placed on the floor.

The two halves of the vertical shaft are connected through the dynamic torque spring coupling. The upper end of the lower shaft portion carries a metal drum containing a rather powerful spiral spring of the type employed in spring-powered devices. The outer most end of the spring is anchored to the inner cylindrical surface of the drum, and the inner end is attached to the lower end of the upper shaft portion. A celluloid protractor is screwed to the base of the drum, and the pointer for measuring the angle of twist of the spring is attached to the upper half of the shaft. Since both the scale and pointer rotate with the driven cylinder, readings are obtained with a stroboscope (General Radio Strobotac). The means for calibrating the torque device under conditions of operation simulating those of normal operation are shown in Fig. 6. This system permitted a known torque to be applied at any given speed of rotation and thereby eliminated error due to variation of frictional torque in the lower pair of ball bearings.

It was desired to rotate the cylinder carrying the solid surface to be investigated without the use of a bearing at the lower end of the cylinder. This was achieved by statically and dynamically balancing the cylindrical rotor and suspending it by means of a flexible coupling. Static balancing effected by applying the Kirkpatrick method to the two ends of the rotor greatly facilitated the dynamic balancing. Investigation of several couplings showed them to be unsuitable for suspension of the rotor. However, excellent results were obtained with a closely coiled, preloaded helical coil of ⅛-inch steel spring wire. The ends of the shafts to be coupled together were machined to

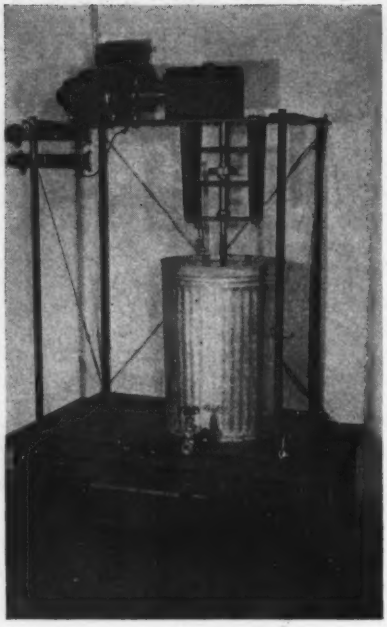


FIG. 4
Photograph of Complete Instrument

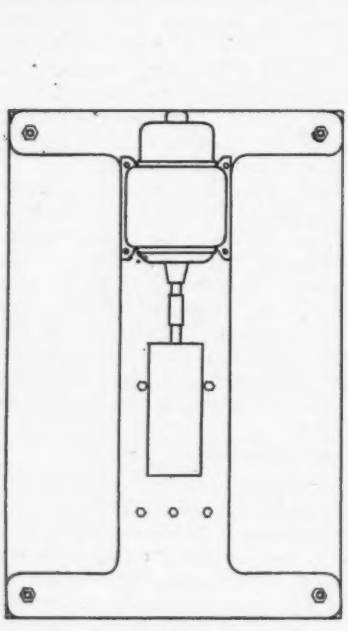


FIG. 1

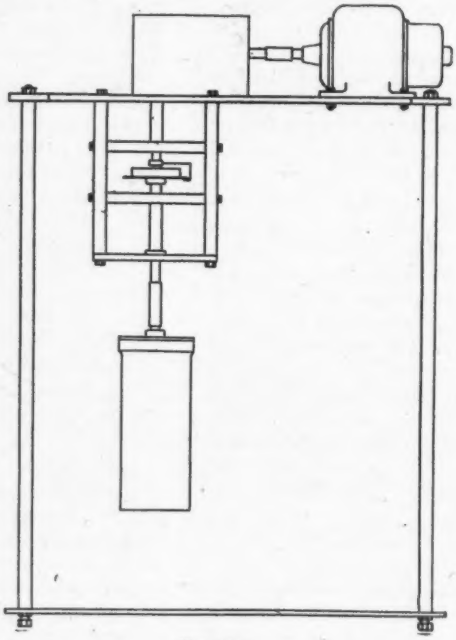


FIG. 2

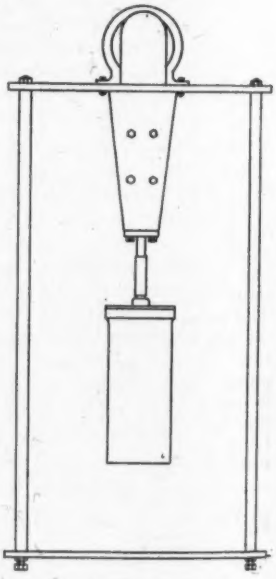


FIG. 3

FIG. 1—Plan of Apparatus. FIG. 2—Front Elevation of Apparatus. FIG. 3—Left Side View of Apparatus

give a light force fit into the coiled spring, the inner diameter of which was 5/8 inch. Rotation of the cylinder was quite free of precession, and throw of the outer surface was negligible.

Operation and Results

Using calibration charts for the torque spring coupling, resistance was measured in terms of torque, in units of pound-feet. The rotor was always submerged in stock to a depth of 11 inches, so that it would be possible, if desired, to calculate ϕ', the frictional force acting upon unit area of the stock-solid interface *(1)*. Since the area in contact with the stock was a constant value throughout the work, ϕ' should vary in proportion with the torque; in the interest of simplicity and directness, the friction is expressed only as torque in the present work.

The stocks employed in this work were an unbleached southern kraft and an unbleached groundwood. The kraft was obtained in machine-dried sheets and the groundwood as wet lap. In disintegrating both pulps, a 5-pound semicommercial beater was employed, with the roll lifted completely off the bedplate. Five pounds of the stock were soaked in hot water for 10 minutes to facilitate tearing into pieces. These pieces were added to the beater gradually, and circulation was permitted to go on for 15 minutes. The resulting stock was only slightly beaten, and was free of lumps. The stock was run onto a thickening screen and most of the water drained off. This thickened stock was then transferred to the apparatus. Freeness of the stock was measured with the Schopper-Riegler freeness tester, and expressed as cubic centimeters.

Although the details of each experiment depended on the object of that particular experiment, the general procedure may be outlined as follows. For a series of experiments on varying consistencies, an approximate amount of the thickened stock required for 3% consistency was placed in the stock container, to which was added water of the temperature necessary to adjust the temperature of the final mixture

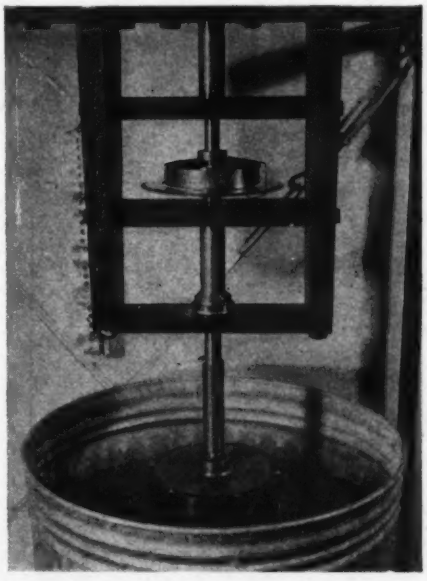


FIG. 5
Photograph of Vertical Shaft

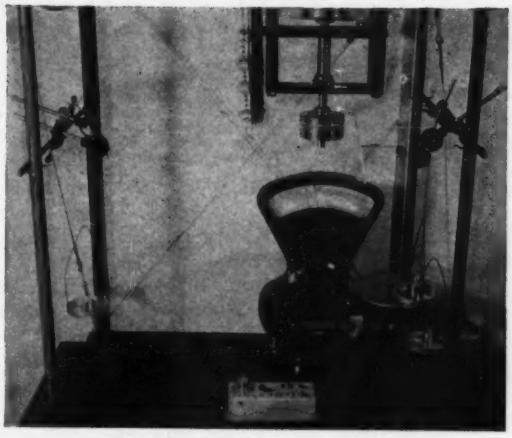


FIG. 6
Photograph of Calibration Setup

to 25 ± 1° C. and to give the desired volume of stock. This was thoroughly mixed by hand and by the use of a wooden stirrer. The consistency was then determined, as well as the freeness. The cylinder surface was cleaned with water and rinsed with 95% alcohol. The cylinder was inserted in the stock and fixed in the coupling device. The stock around the cylinder was mixed again by hand, after which the desired measurements were taken.

After finishing measurements at this consistency, the cylinder was removed and washed with water and alcohol. Portions of the stock were removed, and the stock remaining in the cylinder was diluted with water to give a lower consistency. A consistency measurement was made and this stock used for further experiments. This procedure was repeated for as many consistencies as desired in the particular experiment.

"Plug flow" is a term used in this work to describe the type of motion occurring in stocks of consistency greater than 2% and at speeds below a critical speed which may be described as follows: After the cylinder has rotated at a given speed for a time sufficient for equilibrium to be established at that speed, the curve relating frictional torque and rotational speed exhibits a break. The critical speed is that corresponding to this break.

Results obtained immediately after agitating the stock around the cylinder are different from those observed after equilibrium is established, when the speed of rotation is above the critical speed. When the speed is below the critical speed, there is no difference between curves based on "instantaneous" and "equilibrium" data. "Instantaneous" means that the torque values are those in operation immediately after agitation of the stock, and "equilibrium" describes the torque values in operation after the stock has been agitated and the torque values allowed to fall to a constant level. Instantaneous and equilibrium torque-speed curves showing the effect of agitation are shown in Fig. 7. The existence of the break in the equilibrium curve depends upon the consistency. Equilibrium curves for four consistencies are presented in Fig. 8. It will be seen that the break is absent when the consistency is less than about 2%. The surface in contact with the stock was very smooth steel.

During the runs made to obtain the data given in

Fig. 7, several observations of importance were made, as follows:

1. At the consistency employed (over 2%), there are two conditions of flow. At the lower speeds the cylinder turned in the mass of stock without disturbing the stock immediately surrounding the surface. As the speed was increased, a point was reached at which layers of the stock adjacent to the cylinder were torn off and carried around with the cylinder. This phenomenon occurred at the break in the equilibrium curve.
2. The drop in the torque value from the instantaneous value to the equilibrium value is accompanied by this shearing-off action.
3. The consistency appears to have been lowered in this sheared-off layer.
4. A definite time is required for the torque to change from the instantaneous to the equilibrium value.

In experiments carried out to investigate the effect of consistency (see Fig. 8), there were three observations of interest:

1. At the lowest consistency (1.85%), the phenomenon of two types of flow at higher and lower speeds was not observed.
2. The distinctness of the difference between the two types of flow increases as the consistency increases.
3. With the stock of the consistency which exhibited only one type of flow over the velocity range, agitation had no effect on the torque readings. The instantaneous and equilibrium values were identical under this condition.

Results on the effect of surface roughness are presented in Fig. 9. The rough surface was obtained by lacquering the cylinder with clear Duco and blowing an even layer of 60-mesh sand upon the lacquer while the latter was still tacky. Two coats of lacquer were then applied, giving a definitely rough surface having a crinkled appearance. In previous work, at lower speeds, it had been found that stock-solid friction was surprisingly independent of surface smoothness. The results shown in Fig. 9 bear this out, but show that the influence of roughness is large when equilibrium is established at the higher speeds.

In view of earlier results, which showed that a smooth copper surface exhibited more friction against stock than a smooth steel surface, it was considered of interest to compare these two metals at the higher speeds and consistencies possible with the present equipment. Following measurements with the steel surface, the steel was cleaned with soap and water and with 95% alcohol. No abrasive was used. It was then immersed in an acid copper sulphate bath, and an adherent, bright copper surface was plated by displacement. No electrical energy was employed. This resulted in a copper surface of contour closely similar to that of the underlying steel surface. The results obtained with this surface were closely similar to those observed with the steel surface. Speeds were varied from 300 to 800 r.p.m., and consistencies from 1.58 to 2.94% were employed.

In experiments designed to investigate the effect of fiber length it was found that groundwood stock did not display the phenomena of stationary mass

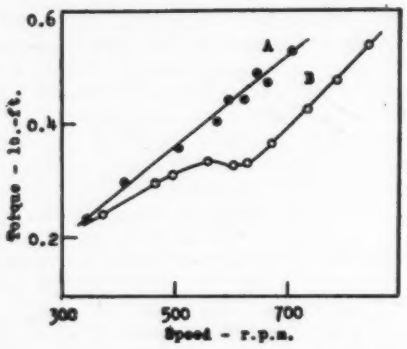


FIG. 7

Effect of Agitation on Flow Properties of Unbleached Kraft Pulp Consistency 2.88%. A—Instantaneous Curve. B—Equilibrium Curve

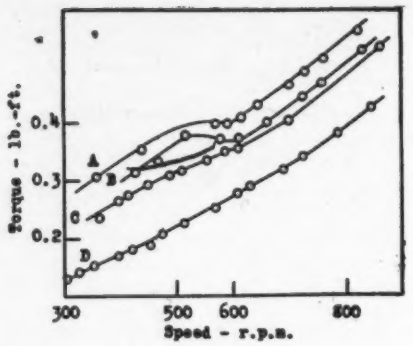


FIG. 8

Flow Properties of Kraft Stock of Various Consistencies with a Steel Cylinder Surface. A—3.20%. B—2.88%. C—2.67%. D—1.85%

flow followed by shearing-off and nonplug flow. No formation of fiber balls was observed in this stock.

The influence of a dispersing agent is shown in Fig. 10. Locust bean gum in an amount equal to 1% of the dry weight of unbleached kraft pulp in a 2.85% consistency stock was employed. It will be seen that a large reduction in friction was effected at ordinary speeds (e. g., 400 r.p.m. corresponds to a peripheral speed of 10.5 ft. per sec.).

Important to our understanding of the mechanism of flow in pipes is the relationship between the speed of flow and the time required for the torque to fall from its instantaneous value to the equilibrium value. This time is not accurately determinable because of the uncertainty of the end-point. However, ten trials at 610 r.p.m. gave times varying from 120 to 180 seconds, with an average of 150 seconds. An equal number of trials at 710 r.p.m. gave times from 60 to 120 seconds, with an average of 90 seconds. Thus the time is an inverse function of the speed, roughly varying as the inverse cube of the speed.

Discussion

The effects of agitation and consistency may be summarized as follows:

1. Above the critical consistency
   a. Below critical speed—*plug flow*
   b. Above critical speed—*instantaneous plug flow* or *equibrium plug flow*, depending on how long the flow has occurred after agitation.

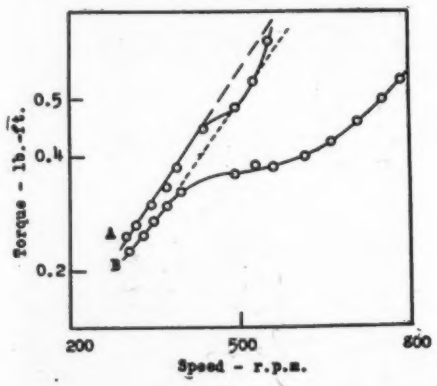


FIG. 9

Effect of Surface Roughness on Frictional Stress Properties of Kraft Stock—Consistency 2.85%. A—Rough Surface Equilibrium. B—Smooth Surface Equilibrium. —— —— Instantaneous Region for A. ----- Instantaneous Region for B.

2. Below critical consistency
   a. No critical speed exists—*nonplug flow* at all speeds

Several significant facts were obtained from the experiments on agitation. Agitation of the stock around the cylinder sets up a stock structure which results in a high torque value under conditions 1 (b) above, and the torque eventually drops to a constant value. For a given speed and consistency the high and low torque values can be obtained repeatedly in the same batch of stock by agitating the stock. The torque-speed curve obtained by agitation (the instantaneous curve) is a straight line. Below the critical speed and above the critical consistency, the instantaneous and equilibrium curves are identical. Above the critical speed and above the critical consistency the instantaneous curve is a straight line continuation and extension of the equilibrium curve in its plug flow region.

The critical consistency is related to the bunching tendency of the fibers in the stock. Although no data on bundle sizes have been obtained, visual observation definitely indicated that the bunching tendency of the long fibered kraft stock is closely related to the critical consistency and critical speed. When the consistency was below the critical value, the bundles or balls of fibers were much smaller and the stock structure more homogeneous.

A deduction concerning the flow of kraft stock over a solid surface can be drawn from the experiments on agitation and consistency of the stock. Below the critical consistency, flowing kraft stock will have only one type of flow at all speeds. The friction loss will increase uniformly with speed, to quite high speeds. However, when the consistency is above the critical value, the flow may take on any one of three types. Below the critical speed, only one type of flow is possible; above the critical speed the flow will be of the instantaneous type over the first part of the course of flow, but farther along the equilibrium type of flow, involving a lower frictional drag, will set in. Thus the overall frictional loss will involve (at higher speeds and consistencies) two kinds of flow—a plug flow over the earlier portion of the course, and a transition to equilibrium flow over the remainder of the course—and, accordingly, the average frictional loss per unit length of the course will depend upon the length of the course. This idea will be further elaborated in a discussion of the flow in pipes.

In studying the influence of surface roughness on the time required for the stock to shift its structure from that giving the instantaneous torque to the form giving the lower, equilibrium torque, it was found that the transition time was appreciably smaller for rough surfaces. This fact has a significant bearing on the interpretation of certain results on the friction of flow of stock in smooth and rough pipes.

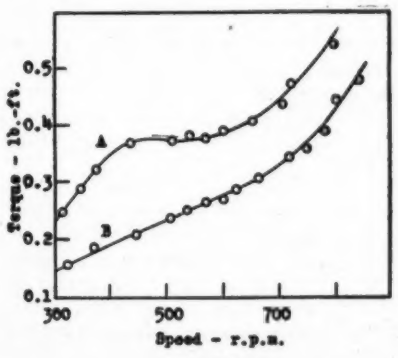


FIG. 10

Flow Properties of Untreated Kraft Stock and Kraft Stock Treated with 1% Locust Bean Gum. Steel Cylinder; Consistency, 2.85%. A—Without Gum. B—With 1% Gum.

The fiber-bunching or balling tendency of a stock, which appears to be related to fiber length, is evidently associated with the flow phenomena thus far described. Groundwood pulp, which exhibits very little bunching, does not exert different forms of torque-speed relationships depending on speed and consistency, as in the case of the kraft pulp. Moreover, the addition of a dispersing agent, which decreases the size of the fiber bundles, to the kraft pulp has a profound effect on the torque-speed relationship, as shown by Fig. 10.

A Theory of the Mechanism of the Flow of Stock in Pipes

Upon the basis of the conclusions drawn from the experiments which were performed, a theory of the mechanism of the flow of stocks in pipes has been developed. No attempt has been made to correlate quantitatively the actual values of frictional stresses and speeds obtained in these experiments with friction losses and velocities of stock flowing in pipes. However, qualitative correlations of the measurements made by means of the rotating cylinder instrument with frictional losses at various speeds of stock flowing through pipes has given a theory of this flow in pipes which agrees with all the known data and explains many of the apparent discrepancies which exist. This theory assumes the flow of a long fibered stock exhibiting the flow phenomena displayed by the unbleached kraft employed in this study. Groundwood stock does not display the peculiarities of flow in pipes which have been reported for such chemical pulps as sulphite *(3)*.

The following nomenclature is used in the discussion:
L = length of pipe (in feet).
L_p = length of pipe under plug flow (in feet).
L_i = length of pipe under instantaneous plug flow (in feet).
L_e = length of pipe under equilibrium plug flow (in feet).
H = overall head loss (in feet).
ΔH = overall head loss gradient (in feet per foot of pipe).
ΔH_p = head loss gradient for plug flow (in feet per foot of pipe).
ΔH_i = head loss gradient for instantaneous plug flow (in feet per foot of pipe).
ΔH_e = head loss gradient in equilibrium plug flow (in feet per foot of pipe).
v = linear velocity of stock (in feet per minute).
t = critical time.

On leaving a centrifugal pump, or other point where the stock is agitated, and entering a pipe, the stock is initially in the condition following agitation in the experimental apparatus. If the speed is below the critical speed, the stock will be in plug flow throughout the whole length of the pipe, and the following equations describe the state of affairs:

$$L = L_p \quad (1)$$
$$H = H_p \quad (2)$$
$$H = L\,\Delta H = L_p\,\Delta H_p \quad (3)$$

As the speed increases in this region, ΔH increases in a simple manner; the friction-head loss versus velocity curve rises.

When the critical speed is reached and exceeded, the region in which two stock structures are possible comes into existence. At some point in the pipe length at the end away from the pump, a region of equilibrium plug flow appears. Over the length of pipe

from the pump to this equilibrium flow region the stock flow is under instantaneous plug flow, or

$$L = L_1 + L_e \quad (4)$$

The length L_1 is determined by the value of the critical time at this speed. The division between L_1 and L_e is not clear and distinct, but for the sake of discussion it is assumed that the division is distinct. Thus,

$$H = L_1 \Delta H_1 + L_e \Delta H_e \quad (5)$$
$$L_1 = t\, v \quad (6)$$
$$t = C/v^n \quad (7)$$
$$L_1 = C/v^{n-1} \quad (8)$$
$$n \cong 3 \quad (9)$$

As the speed is increased, L_1 decreases (Eq. 8). The first portion of the right side of Equation (5) then decreases, or does not increase as rapidly as before. At the same time, L_e increases, and the term $L_e \Delta H_e$ becomes the controlling factor. It will be recalled that ΔH_e is less than ΔH_1. The result is to cause the overall friction loss H to pass through a maximum in the friction head loss versus velocity curve, a peculiarity which has heretofore not been satisfactorily explained.

When a velocity is reached at which the critical time becomes so small that L_1 becomes negligible, the loss in value of the term $L_1 \Delta H_1$ is balanced by the steadily gaining value $L_e \Delta H_e$ and the friction head loss curve goes through a minimum and rises with increased speed. Thus, at very high speeds the total head loss is given simply by $L \Delta H_e$.

Thus, the explanation of the peculiarities of the flow of stock in pipe lies in the fact that two entirely different flow types exist at the same velocity under the correct conditions. These differences exist, not across the diameter of the pipe, as some investigators have suggested, but along the length of the pipe. Under certain conditions of fiber length, consistency, and velocity, a pipe carrying stock has part of its length under instantaneous plug flow conditions and another portion under equilibrium flow conditions, there being a relatively short length of pipe between these portions in which transition occurs. With this conception, a clear insight into the peculiarities of stock flow is obtained.

Conflicting results have been reported for the relative head losses in copper and iron pipe. It is well known that copper pipe is smoother than an iron pipe, yet the head loss in a copper pipe has been observed at times to be greater than that in an iron pipe. The above theory explains the apparent discrepancies. An experiment on surface roughness showed that the critical time is greater for a smooth surface than for a rough one. The effect of this is to make L_1 greater for a smooth pipe than for a rough one at any velocity (in the region yielding two types of flow). Thus the disappearance of the instantaneous plug flow length will take place at a lower velocity in a rough pipe, and, correspondingly, the maximum in the friction head loss curve will occur at a lower velocity in a rough pipe. This is in direct agreement with the data of Brecht and Heller (*4*). In their experiments with iron and copper pipe, they found that the friction loss curve for iron reached a maximum at a lower velocity than the curve for a copper pipe of the same diameter. The above theory shows that this results from the fact that commercial iron pipe is much rougher than commercial copper pipe. Their results showed that, in two velocity regions, the friction loss in iron was greater, but that in the intervening region the friction loss in copper was greater. This is in accord with the theory.

One of the outstanding facts concerning the pipe friction measurements made by various investigators is that no two sets of data agree on the values of pipe friction. The discrepancies are easily explained in the light of the theory. Because of the existence of two states of flow, each of which gives different values for head loss per foot of pipe length, the average value of head loss per foot for any length of pipe depends upon the total length of the pipe being measured. Thus, in order that two investigators may obtain the same results, they must each use the same pipe length for their measurements.

Differences in pipe length would be the main source of discrepancies between the results of different investigators. However, the theory indicates several other factors which will affect practical measurements. Since the amount of turbulence produced in the pump influences the degree of agitation of the stock, the type of pump employed will affect the observed head losses. Also, the actual pipe layout, the number of elbows employed, etc., would affect the results on friction per foot of pipe, because elbows, valves, and certain other devices produce turbulence, and the agitation produced by turbulence tends to bring about the instantaneous plug flow.

Literature Cited

1. Baldwin, P. C., and Van den Akker, J. A., *Paper Trade J.* 109, no. 12: 31-36 (Sept. 21, 1939); *Tech. Assoc. Papers* 22: 317-322, 126-130 (1939). The reader's attention is called especially to the discussion (p. 126-130) in *Tech. Assoc. Papers.*
2. Delevanti, Cyril, Jr., Unpublished work, The Institute of Paper Chemistry.
3. Forrest, F., and Grierson, G. A. H., *Paper Trade J.* 92, no. 22: 39-41 (May 28, 1931); *Tech. Assoc. Papers* 14: 259-261 (1931).
4. Brecht, W., and Heller, H., *Wochbl. Papierfabr.* 66, Nos. 14, 18, 20, 23, 25, 28, 31, 34, 38, 40 (1935).

Lighter Newsprint Will Be Available

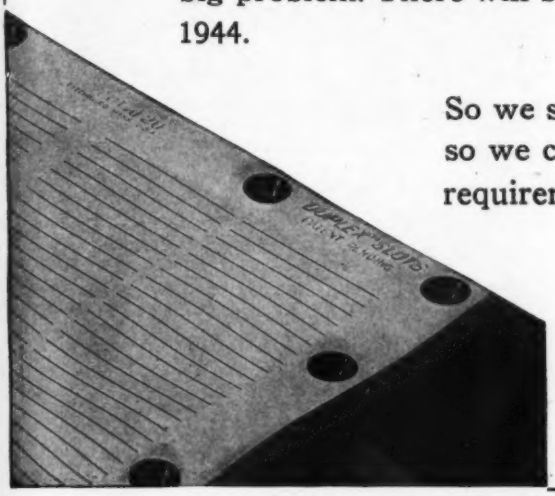
WASHINGTON, D. C., April 26, 1944—The agreement between representatives of the War Production Board and the Canadian Newsprint Administrator for the production by Canada of 30-pound newsprint for United States use was arranged so that such United States newsprint publishers as wish may experiment in a practical way with 30-pound newsprint, Arthur R. Treanor, director of the WPB Printing and Publishing Division, said today. It is a two-month experiment commencing May 1, at which time Canadian mills will begin to fill orders for 30-pound print paper, he said. "However, all U. S. publishers' orders for 32-pound paper will be filled completely by Canadian mills," Mr. Treanor explained.

Provisions will be made so that each publisher will get his full quota tonnage if any reduction in Canadian production results. Mr. Treanor also pointed out that the users of 30-pound paper will get greater yardage per pound than users of 32-pound paper. Actually, individual users of the 30-pound stock will gain about 6⅔% in area.

Following the experimental period, during which U. S. publishers are privileged to buy either 32 or 30-pound paper, Mr. Treanor said, the data on usage will be studied by the Printing and Publishing Division, and a further agreement with Canada entered into. During the experimental period, the former agreement on the part of Canada to furnish 200,000 tons of 32-pound newsprint a month has been suspended, as it was realized the production of both the 32 and 30-pound paper would reduce the total tonnage immediately available.

Order Screen Plates Now!

Pulp and Paper Mills used only half as many Screen Plates in 1943 as normally used. Consequently plate inventories are low everywhere. Materials are easier, but manpower is the big problem. There will be a tremendous demand for plates in 1944.



So we say *order early* — ORDER NOW — so we can be sure to take best care of your requirements.

Fitchburg Screen Plate Co., Inc.

301 SOUTH STREET

Fitchburg, Massachusetts

2

U.S. PAT. NO. 2062773

MONO PLANE

"SMOOTHER SURFACE-LONGER LIFE"

weave

1

Monoplane weave is an outstanding improvement in Fourdrinier wire construction. It provides maximum support for the sheet. This support is obtained by the use of a hollow shute wire which crimps more readily in the weaving process than the conventional solid wire thereby leaving the warp and shute on one plane. This gives less "wire mark" to the paper surface and because of the long warp knuckles greater wire life is obtained.

Appleton Wire Works, Inc.

APPLETON, WISCONSIN

New York Paper and Pulp Market Review

WPB Announces Total Production of Wrapping and Bag Papers For Second Quarter Will Be 11 Percent Under First Quarter—More Pulpwood Will Be Shipped From Northwest — Other News.

Office of the PAPER TRADE JOURNAL.
Wednesday, April 26, 1944.

Wholesale demand for all types of paper and paper products continues heavy with output at a good level. Reports received from some of many manufacturers' representatives, jobbers, and general paper merchants, express concern at the rising costs and the prospect that the trade supply of some major types of papers may be very short in the future, particularly kraft papers and boards.

The WPB announces that the total production of wrapping and bag paper for the second quarter will be about 11% less than in the first quarter of this year, and about 23% less than in the second quarter of 1943. It is expected that substitute wrapping and bag paper, of less strength, will provide some relief. Second quarter production of wrapping and bag papers may be reduced to 269,000 tons, of which 79,000 tons may be grocery and variety bag papers, and 46,000 tons wrapping papers, leaving about 144,000 tons of other coarse papers.

The index of general business activity for the week ended April 15, declined to 141.6, from 143.8 for the previous week, compared with 138.0 for the corresponding week last year. The index of paper board production was 142.8, compared with 143.0 for the previous week and with 151.3 for the corresponding week last year.

Paper production for the week ended April 15 was estimated at 85.0%, compared with 98.3% for 1943, with 100.8% for 1942, with 94.0% for 1941, and with 89.1% for the corresponding week for 1940.

Paper board production for the week ended April 15 was 92.0%, compared with 96.0% for 1943, with 94.0% for 1942, with 78.0% for 1941, and with 72.0% for the corresponding week for 1940.

No curtailment in the second quarter of 1944, from the first quarter, is expected in the output of fine papers and book papers, the Department of Commerce reports. Some increases will be made in the production of toilet tissue and sanitary napkin stock, and the output of paper board will probably show an increase in the second 1944 quarter.

Wood Pulp

More pulpwood will be imported from the Puget Sound area and from British Columbia, the WPB has announced. Wood pulp production for the second 1944 quarter, states the Pulp and Paper Division, of the War Production Board, is estimated to produce a supply of 2,852,000 tons, which includes 276,000 tons from Canada. Requirements are expected to approximate 3,036,000 tons, of which paper will consume 2,832,000 tons and paper board, 204,000 tons.

Rags

Mill buying of new cotton cuttings is currently active, with buyers taking about all relatively limited supplies. Prices are firmly maintained at ceiling levels.

Demand for old cotton rags is active at this date. The roofing grades are in heavy demand. The market is strong with prices at ceiling levels.

Old Rope and Bagging

Demand is steady and absorbs all available supplies of Manila rope at the ceiling price. Sisal and other hard fibers are in heavy demand. All prices are very strong.

Trading in scrap bagging continues light. No important change from the sluggish market situation, which has prevailed for some months, has occurred. Prices are soft and continue nominal.

Old Waste Paper

More waste paper is urgently needed by paper and board mills. The situation is still critical. Current collections are still below the average 666,000 tons per month. Mill receipts last year, the Department of Commerce reports, were 6,065,000 tons, out of a total estimated recoverable supply of 13,436,000 tons. This indicates that only 45% of the supply was collected. To reach the goal of 8,000,000 tons in 1944, the report states, it will be necessary to collect 66% of the available supply.

Twine

The twine market reports demand is active for all obtainable grades of twine. Prices are firmly maintained. No important change in the twine and cordage markets has been reported during the current week.

Quaker City Co. Elects Officers

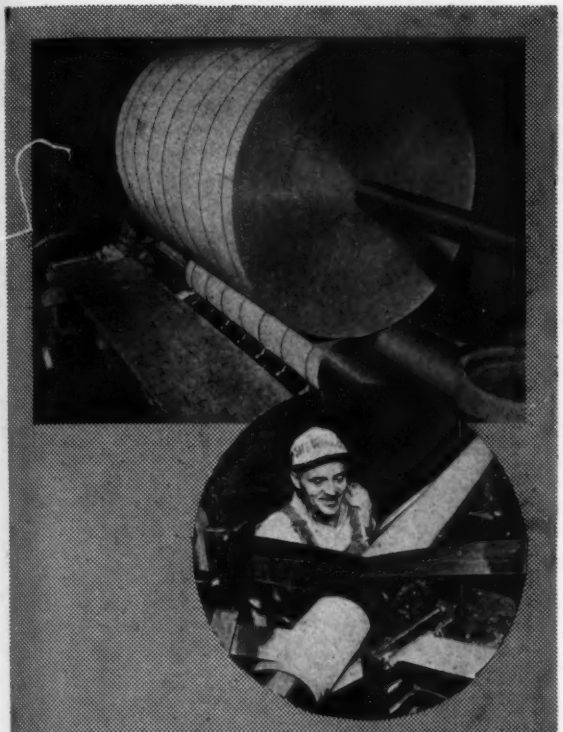
[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., April 24, 1944—W. Brelsford Killhour, president of the Quaker City Paper Company makes the following announcement regarding election of officers and new appointments in the personnel, following action of the board of directors: George J. Geisz, former vice-president and assistant treasurer, succeeds the late William F. Killhour as treasurer of the company; C. Albert Wheeler, formerly with Kidder, Peabody & Co., investment bankers, assistant treasurer and a director, was also appointed office manager. Mr. Geisz, who started his paper career with the A. G. Elliott Company in 1893, has the distinction of being the sole surviving incorporator of the Quaker City Paper Company, having joined with the late Mr. Killhour in the formation of that company in 1903.

Delaware Valley TAPPI To Meet

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry will meet at the Engineers Club, Philadelphia, Pa., on Friday, May 5 at 6:30 P.M.

The principal speaker will be John F. Halladay, Technical Director of the American Coating Mills, Elkhart, Ind., who will talk on The Mechanism of the Various Basic Methods of Paper Coating.



Fibre Paint Cans Save Tons of Steel Daily

The Sherwin-Williams Co., well-known paint manufacturers, use Kraft wrapping paper and non-critical materials to manufacture unbreakable, leak-proof, fibre paint cans, following a process perfected by their own engineers.

The first step involves slitting rolls of Kraft wrapping paper into 4" wide strips, and winding these strips into compact, uniformly-wound rolls. This is done at high speed, 1,000 feet per minute—with CAMACHINE 10-11, illustrated.

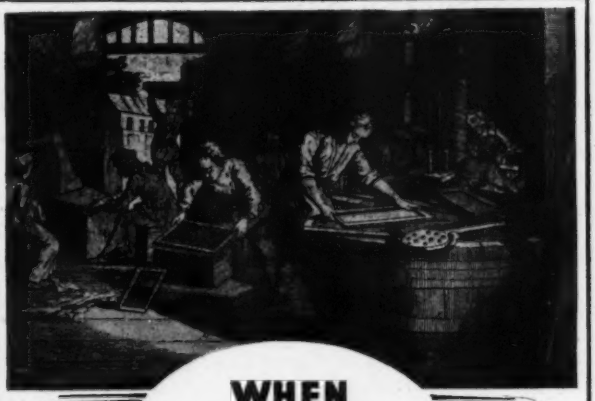
The 4" wide rolls of Kraft converted on the CAMACHINE, are then transferred to a spiral tube-winding machine, shown in the illustration, producing a continuous tube. The tube is sawed off into yard lengths, for convenient handling, on a gang cutter, which cuts, for example, four tubes from the 36" length. Top and bottom rims are crimped on the tubes. Each can is then tested for leaks on a special machine and the job is done.

This is just one more instance of the way CAMACHINES help harassed production engineers save critical materials for the war effort. Further details on CAMACHINE 10-11 are yours for the asking.

CAMERON MACHINE CO.,
61 POPLAR STREET BROOKLYN 2, N. Y.

MIDWEST OFFICE: HARRIS TRUST BLDG.,
111 W. MONROE ST., CHICAGO 3, ILLINOIS

CAMACHINE



WHEN ONLY SHEETS OF PAPER WERE MADE—

PAPER SHORTAGE WASN'T A PROBLEM TO THE MASSES—

THE making of paper was an art in 1778, made by hand, sheet by sheet. Only the royal and wealthy could use paper because of its cost.

The art of papermaking progressed until it developed into an industry that produced tons of paper faster and better than the early papermakers produced sheets.

Paper to be produced was done so by the use of felt layers, as the sheet was placed between the felt layers and water pressed out of it. As felts were important in 1778, so they are just as import today in the manufacture of paper. Since 1890 Appleton felts have progressed with production methods of the industry, year by year meeting all requirements of paper mill production—in 1944 the standard for paper mill felts.

make APPLETON FELTS good paper

APPLETON WOOLEN MILLS

APPLETON, WIS.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, April 26, 1944.

BLANC FIXE—Quotations on blanc fixe continue firm and unchanged. Demand is moderate. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—Current demand is active but supply is adequate. Quotations are unchanged. Prices on bleaching powder range at from $2.50 to $3.10 per 100 pounds, in drums, car lots, at works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f.o.b. shipping point. Imported, 11¼ cents per pound.

CAUSTIC SODA—Demand continues heavy. Market a little less tight. Prices continue unchanged. Solid caustic soda is quoted at $2.30 per 100 pounds; flake and ground is quoted at $2.70 per 100 pounds; all in drums, car lots, at works.

CHINA CLAY—Quotations on china clay are unchanged. Current demand is reported fair. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mine. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Demand and production is reported satisfactory. Quotations are unchanged. Chlorine is currently quoted at $1.75 per 100 pounds, in single unit tank cars, f.o.b. works.

ROSIN—Prices on some grades are lower for the current week. "G" gum rosin is quoted at $4.65 per 100 pounds, in barrels, Savannah. "FF" wood rosin is quoted at $4.66 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is currently quoted at $4.92 per 100 pounds, f.o.b. works.

SALT CAKE—Prices on salt cake are reported unchanged for the current week. Demand is reported moderate. Domestic salt cake is quoted at $15 per ton, in bulk. Chrome salt cake is quoted at $16 per ton. All prices in car lots, f.o.b. shipping point.

SODA ASH—Heavy demand continues for industrial requirements and market is still tight. Quotations continue unchanged. Current prices, car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Relatively small shipments of corn continue to maintain a tight market situation in corn products. Quotations are unchanged. The pearl grade is quoted at $3.72 per 100 pounds; powdered starch at $3.83 per 100 pounds; all prices in bags, car lots, f.o.b. Chicago.

SULPHATE OF ALUMINA—Demand reported good. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.25 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is quoted at $2.35 per 100 pounds, in bags, at works.

SULPHUR—Quotations on sulphur continue to conform to prevailing market prices. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the price at Gulf Ports is $17.50 per long ton.

TALC—Prices on talc continue unchanged. Demand moderate. Domestic grades are currently quoted at from $16 to $21 per ton, at mines; Canadian at $24 per ton. All prices in car lots.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

News, per ton—

Roll, contract	*$58.00	@	—
Sheets	64.00	"	—

* OPA Maximum Price.

Kraft—per cwt.—Carload Quantities
Zone A, f.o.b. Mill

Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—

* OPA Manufacturers' Prices.

Tissues—Per Ream—Carlots

White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—

Toilet—1 M. Sheets—Per Case

Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—

Paper Towels, Per Case—

Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—

Manila—per cwt.—C. l. f. a.

No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.	5.75	"	6.00

Boards, per ton—

News	*48.00	@	—
Chip	*48.00	"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—
White, Assorted Items.
Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—
White, Assorted Items.
Delivered in Zone 1:

	Bonds	Ledgers
No. 1..	$10.55@$12.75	$11.70@$14.25
No. 2..	9.65 " 11.75	10.80 " 13.25
No. 3..	9.20 " 11.25	10.35 " 12.50
No. 4..	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—
White, Cased Papers
Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@$15.50
No. 2 Glossy Coated	12.40	" 14.00
No. 3 Glossy Coated	11.60	" 13.25
No. 4 Glossy Coated	11.15	" 12.75
No. 1 Antique (water marked)	10.25	" 11.75
No. 2 Offset	9.60	" 11.00
A Grade E. F.	9.35	" 10.75
A Grade S. & S. C.	9.60	" 11.00
B Grade E. F.	8.85	" 10.25
B Grade S. & S. C.	9.10	" 10.50
C Grade E. F.	8.55	" 9.75
C Grade S. & S. C.	8.80	" 10.00
D Grade E. F.	8.25	" 9.50
D Grade S. & S. C.	8.50	" 9.75

Ivory & India at $.50 cwt. extra

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight. Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$86.00
Unbl. Softwood Sulphite	74.00
Bl. Hardwood Sulphite	83.50
Unbl. Hardwood Sulphite	71.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich	72.00 @ 82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi-Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	72.00
Unbl. Soda	68.00
Groundwood	50.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50% 80% Air Dry Weight
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices

Domestic Rags

New Rags
(Prices to Mill f. o. b. N. Y.

Shirt Cuttings— New White, No. 1	6.50	@	7.25*
Silesias No. 1	—	"	5.75*
New Unbleached	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings		"	3.50*

* OPA Maximum Prices.

MR. MANUFACTURER:

Success doesn't happen—it is planned.

Plan now for additional plant capacity to meet the pent up demand for consumer goods which will follow the War.

Let us supply you information about the Southeast. We have studied this area for years and can assist any industry contemplating expansion. Our services are without obligation or cost and all inquiries are kept confidential.

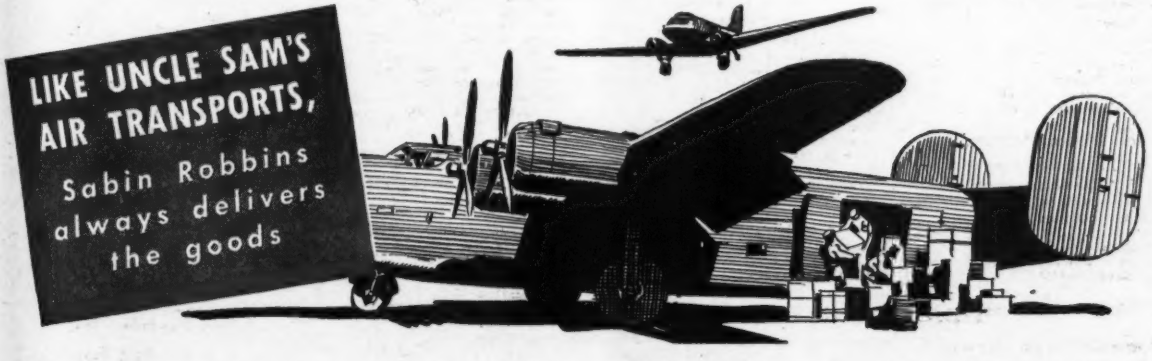
Address—

Dallas T. Daily

General Industrial Agent

Seaboard Air Line Railway

Norfolk 10, Virginia



Just as giant cargo planes ferry supplies to where they're needed, Sabin Robbins moves your mill jobs and seconds speedily, efficiently and profitably with a modern system of NATIONAL DISTRIBUTION. Each of 20 warehouses and sales offices functions as a terminal to serve your needs. A call to any one will show you how we help cut losses. Why not make that call TODAY?

THE SABIN ROBBINS PAPER COMPANY · CINCINNATI 23, OHIO

PURCHASING OFFICES: Detroit 16, Mich., and 41 Park Row, New York 7, N. Y. SALES OFFICES in 20 Principal Cities

NATIONAL DISTRIBUTORS OF PAPER MILL JOBS

Atlanta 3, Ga. · Baltimore 2, Md. · Buffalo 10, N. Y. · Chicago 23, Ill. · Cincinnati 23, O. · Cleveland 4, O. · Dayton 6, O. · Detroit 16, Mich. · Kansas City 2, Mo. · Los Angeles 15, Cal. · Louisville 2, Ky. · Milwaukee 3, Wisc. · Minneapolis 1, Minn. · Newark 4, N. J. · New York 13, N. Y. · Peoria 5, Ill. · Philadelphia 4, Pa. · Pittsburgh 22, Pa. · Rochester 4, N. Y.

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	2.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	@	4.35
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Mixed Books	.85	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	.85	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.36	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—	
New White No. 1	.07¼
New White No. 2	.05¾
Light Silesias	.05¾
Black Silesias, soft	.03¾
New Unbleached	.07½
Washable Prints	.04¼
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable shredding	.01¾
Fancy Percales	.04¾
New Black Soft	.03¼
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¾
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¼

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
No. 1 Clean bright—			
Sisal Strings	.04		
No. 2 Clean bright—			
Sisal Strings	.03		
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	3.25	"	3.30
No. 2	1.75	"	1.80
Wool Tares 4/8	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Mixed Books	.85	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	.85	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	3.25	@	—
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	2.00	"	—
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.25	"	—
Jute Cer Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.50	"	—
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	3.75	"	4.00
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04½
Fancy Percales	.04¼	"	.05
New White No 1.	.06¼	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06½
Underwear Cutters, Bleached	.06¼	"	.06½
Underwear Cutters, Unbleached	.05¼	"	.06
Silesias No. 1	.06	"	.06½
New Black Silesias	.03	"	.03½
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06½
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.03¾
Corduroy	.03¼	"	.03½
New Canvas	.06½	"	.06¾
B. V. D. Cuttings	.06¼	"	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.75	"	—
Misc.	2.15	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Kraft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.15	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—